Factors influencing occupational health nursing practice.

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Factors Influencing Occupational Health Nursing Practice

by

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Abstract

The purpose of this study was to carry out a large scale survey of occupational health nursing practice in the UK. Such an overview would facilitate the identification of the main factors currently influencing occupational health nursing practice and inform the construction of a framework or a potential model which could benefit occupational health nursing practice and education.

The research strategy involved accessing a representative sample of occupational health nurses using data collection methods including interviews, on-site observation, and questionnaires' survey in the UK during the period 1991-1992. Data collected during the study is divided into the following three main categories. Stage 1 - Key persons' survey: A total of 83 postal questionnaires were sent to key persons in the UK, other European countries and the US, with 38 being returned (giving a response rate of 48%). Personal interviews were also carried out with 27 of the key person subjects in the UK. Stage 2 - Workplace observation: Four companies representing banking, car manufacture, electricity generation, and food manufacture, were selected in order to observe occupational health nurses' activities and to provide a contextual picture of occupational health nursing practice. Stage 3 - Occupational health nurses' survey: 346 members of the local groups of Occupational Health Nursing in the UK were surveyed, eliciting 251 replies (giving a response rate of 72.5%). Following data collection, qualitative and quantitative analysis was undertaken to yield information from the questionnaire. Statistical techniques such as Chi-square and logistic regression analysis were employed on the data could be quantified using SPSS.

Using a series of logistic regression statistical tests, several influential internal and external factors were found. Internal factors relating to the working environment included policy for occupational health, policy for occupational health nursing, number of employees, type of organisation, and equipment and facilities which were used in the occupational health department. Internal factors relating to occupational health nurses' perceptions and beliefs included ideal roles, ideal functions, characteristics and unique qualities. These factors appeared to be strongly related to various components of the OH nurse's actual roles and functions. The most significant external factor identified which influenced change in practice was education. A framework was developed on the basis of these results, which is relevant to occupational health nursing education and practice.

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List of Abbreviations

AAOHN	American Association of Occupational Health Nurses
ANA	American Nurses' Association
CE-OHN	Continuing Education for Occupational Health Nursing
COSHH	Control of Substances Hazardous to Health Regulations
DIH	Diploma in Industrial Hygiene
EC	European Community
EEC	European Economic Community
EMAS	Employment Medical Advisory Service
EN	Enrolled Nurse
ENB	English National Board
GP	General Practitioner
HSC	Health and Safety Commission
HSE	Health and Safety Executive
ICOH	International Commission on Occupational Health
ICOH-NC	Nursing Committee within International Commission on Occupational Health
ILO	International Labour Organisation
LA	Local Authority
LPN	Licensed Practical Nurse
MSc	Master of Science
NHS	National Health Service
NIOSH	National Institutes of Occupational Safety and Health
OH	Occupational Health
OHMF	Occupational Health Manager Forum
OHNC	Occupational Health Nursing Certificate
OHND	Occupational Health Nursing Diploma
OHPN	Occupational Health Practice Nurse
OM	Occupational Medicine
OPNA	Occupational Practice Nurse Award
OSHA	Occupational Safety and Health Act
PhD	Doctor of Philosophy
RCN	Royal College of Nursing
RCN-SOHN	Society of Occupational Health Nursing within Royal College of Nursing
RGN	Registered General Nurse
SEN	State Enrolled Nurse
SOHN-EC	Executive Committee within Society of Occupational Health Nursing
SRN	State Registered Nurse
UK	The United Kingdom
UKCC	The United Kingdom Central Council for Nursing, Midwifery and Health Visiting
US	The United States
USDL	The United States Department of Labour
WHO	World Health Organisation

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Chapter 1. Introduction

1.1 Introduction

The importance of occupational health (OH) nursing has been recognised internationally (Rossi, 1987). In both developed and developing countries employers value good OH nursing practices for their workers, with some having provided these services to employees for many years (Radford, 1990). The focus of this research is current OH nursing practice in the United Kingdom (UK) and an identification of the factors influencing that practice. A review of the literature was undertaken to inform the proposed study and to provide comparative data where appropriate.

1.2 Development of occupational health nursing practice in the UK

OH nursing in the UK was pioneered by a few far-seeing nurses who were already working in the field. Charley (1978) stated that "Industrial Britain has willed to have 'a splendid thing' in the form of an OH service for its people and the industrial nurse was playing her part in its development". She also described the work of industrial nurses as "the application of the science and art of nursing to the needs of the worker at his place of employment".

The need for specialist training was first raised by the Royal College of Nursing (RCN) Public Health section in 1932. The first formal course arranged with the aid of Bedford College, London, was offered in 1934, where those who attended full time were awarded the Industrial Nursing Certificate (Charley, 1978). Up to 1981, 2,835 people had gained a certificate in Industrial or OH nursing (Silverstone, 1982). Following a World Health Organisation (WHO) policy change in 1952, "industrial nurse" was renamed "occupational health nurse" and the Industrial Nursing Certificate became the Occupational Health Nursing Certificate (OHNC). The change was intended to convey that nurses other in the field were now employed in many different settings and not heavy industry alone such as in the service, sector in hospitals and universities.

It has long been the policy of the RCN to advocate a national OH service which could provide facilities for all workers, but until such a service becomes a reality, the provision of OH service is dependent largely on the employer or employing authority. At present there is no legal obligation on the part of the employer to engage the services of an OH nurse or to provide an OH

service, other than by implication, under the Health and Safety at Work Act (1974). The only statutory requirement is the provision of first aid under the Health and Safety (First Aid) Regulations (1981). Many establishments, both privately and state owned, provide OH services on a voluntary basis; and it is a measure of the responsibility felt by many employers that the number of OH services available today is as high as it is.

The structure of industrial and commercial enterprises in the UK varies widely from large organisations with many thousands of people, to the small concerns employing only a few people. Because of the voluntary nature of OH services in the UK there is wide variation among the establishments. Both the size and type of service provided depends largely on the employers or employing authority, the hazards involved and the economic capabilities of the specific enterprise. It is then, against this background, that the current provision of OH care must be viewed.

The services available to workers range from no OH service at all (as with some agricultural and construction industries) through services which have a trained nurse working alone (with or without OH training) to larger centres employing nurses (who are part of a larger OH and safety team) giving around the clock cover. The team may include other OH specialists, for example, a doctor and occupational hygienists. Many companies have overcome the difficulty of providing a full service by participating in group health services. In this situation the trained nurse visits the plant on a regular basis and is available to advise management, the first aider employed by the company, or the individual himself, on all matters appertaining to health at work. This system is usually financed on a per capita basis with all member companies contributing.

1.3 Background to the study

1.3.1 What is occupational health nursing ?

There have been various definitions applied to occupational health nursing by different professional bodies. The American Association of Occupational Health Nurses (AAOHN, 1987) has defined OH nursing as: "the application of nursing principles in conserving the health of workers in all occupations. It involves prevention, recognition, and treatment of illness and injury and requires special skills and knowledge in the fields of health education and counselling, environmental health, rehabilitation, and human relations". The definition given by the American Nurses' Association (ANA, 1968) for OH nursing states that it is: "that speciality which applies professional nursing principles in developing and carrying out a nursing service tailored to the changing environment of the specific company as well as the needs of its employees".

The Royal College of Nursing (RCN) in the UK (1985) has described OH nursing as: "contributing to the promotion of a high degree of physical and mental health and well-being of people at work, assisting with the prevention of illness and injury due to the work undertaken or the working environment, and providing immediate treatment for illness or injury arising at work". A more recent definition by the International Labour Organisation (ILO, 1983) has defined OH nursing as: "the application of nursing practice and public health procedures for the purpose of conserving, promoting and restoring the health of individuals and groups through their places of employment".

1.3.2 What is an occupational health nurse ?

There have been a number of answers to the question of what constitutes an occupational health nurse. The Nursing Committee of the International Commission on Occupational Health (ICOH-NC) has defined the specific role of the OH nurse as follows: "the OH nurse perceives the workers as a total individual, treats his or her response to potential and/or existing adverse conditions, and considers the implications that this response may have on the individual's family, social, cultural and economic life." A less specific definition was provided by the AAOHN: the OH nurse is, "a registered professional nurse employed by business, industry, or an organisation for the purpose of conserving, protecting, or restoring the health of workers".

The definition by the United States Department of Labour (USDL) was more specific. It described a registered industrial nurse as a nurse: "who gives nursing service under general medical direction to ill or injured employees or other persons who become ill or suffer an accident on the premise of a factory or other establishment. Duties involved a combination of the following: giving first-aid to the ill or injured, attending to subsequent dressings of employees' injuries, keeping records of the patients treated; preparing accident reports for compensation or evaluations of applicants and employees; and planning and carrying out programs involving health education, accident prevention, evaluation of plant environment, or other activities influencing the health, welfare, and safety of all personnel".

The following definition has been agreed by the Society of Occupational Health Nursing within the RCN (1991): "An occupational health nurse is a qualified general nurse registered with the United Kingdom Central Council for Nursing, Midwifery and Health Visiting who has attended a post registration specialised course in OH nursing, recognised by the statutory bodies in the United Kingdom."

1.3.3 The number of occupational health nurses in the UK

From a paper in 1982, estimates as to the number of OH nurses in the UK varied. It was thought that approximately 9000 nurses were working in OH nursing, although less than 3000 had been awarded the specialist qualification available since 1934 (Silverstone and Williams, 1982). A European Community (EC) report in 1992 estimated 6000 OH nurses in the UK. The Employment Medical Advisory Service (EMAS) carried out a survey in 1976 and identified that only 19% of practising OH nurses were qualified in the speciality (OH services - the way ahead). Silverstone and Williams found a marked increase in 1982 with 33% of their 289 respondents holding the qualification.

1.3.4 What is an occupational health service ?

The ILO and WHO are the bodies most frequently associated with defining the aims and objectives, and outlining the purposes of an OH service. The ILO's recommendations (No 112) concerning the establishment of OH services in industrial or other work settings may be summarised as aiming to protect workers against health hazards arising out of their work or their working environment and adapting work processes so that optimum physical and mental adjustment of the worker is achieved.

The WHO's Technical Report 535 (WHO, 1973) outlined the objectives of an OH service in a similar vein, but was more specific in relating to the identification and control of all "chemical, physical, mechanical, biological, and psychosocial agents that were known to be or expected to be very hazardous." Mention was made also of those people especially vulnerable to adverse working conditions.

1.3.5 The occupational health and safety team

The principles of OH cannot be applied in isolation, however, they are inextricably linked to safety principles. This necessitates a "team" approach to OH and safety problems - a fairly new concept for some people and one of potential conflict. Traditionally the training of respective disciplines has been entirely separate but this is changing in the UK, albeit slowly, in some professional areas. Little cognisance has been taken of the results of a joint WHO conference (1972) on the "Teaching of Health and Safety". It was concluded that traditional methods of training were unsatisfactory if optimum use of skills was to be achieved.

The occupational health and safety team members

An ideal basic health and safety team consists of an OH physician, an OH nurse, an occupational hygienist, a safety officer, and a first-aider. The OH nurses with their specialist qualification may now be considered "professionals" whereas nursing alone was perceived as only a "semi-profession". The situation is changing slowly as nurse's increase their educational base and move further towards professionalism. Now in 1994 some well qualified OH nurses are leading not only OH service teams, but in some cases OH and safety teams. However, there has been little research into the co-ordination and effectiveness of OH and safety services. It may well be argued that "the team" is too confined and realistically should include "management" and shop floor representatives to be effective. Furthermore, in real terms the extended team approach exists only within large sophisticated organisations where specially qualified doctors and OH nurses are to be found working together (HSC, 1976).

Safety practitioners and the occupational health nurse

As a direct result of the Health and Safety at Work Act (1974) employers are required to establish a Health and Safety Policy and acquaint all employees with its content. Since the mid-1970s, many employers engaged safety officers or advisors for the first time. Hamilton (1979a, 1979b) looked critically at how safety officers and OH nurse's viewed each other and found widespread ambiguity of roles, but suggested that both had two things in common: 1) neither job had ever been clearly defined, and 2) each was striving for professional status against other peoples apparent reluctance to grant it. The advent of safety representatives (statutory since October 1st 1978) has added a new dimension to any discussion on preventive issues on health and safety. Moreover, clarification of the role of OH nurses has also needed as a result of the implementation of the Health and Safety Work Act, 1974. It was feared that certain of the tasks, which OH nurses considered were their responsibility, were now falling within the provence of safety personnel, which may have affected the work of OH nurses.

Occupational physicians, hygienists and the occupational health nurse

The 1976 EMAS's survey identified that only 17.5% of OH physicians held specialist qualifications and of these, many tended to work with qualified OH nurse's. This raised the question of whether qualified OH nurse's were encouraged by OH physicians to practice and extend their role and how active they were in perpetrating a team approach to health and safety.

It would seem that few occupational hygienists were employed as individuals within a health and safety team in the UK. Their services were often acquired on a consultancy basis as they operated from within a specialist employing authority. Broadly speaking they were concerned with

recognition, evaluation and control of those factors in the working environment which may have adverse impact on the health of workers. They were usually well qualified in a scientific discipline. Their functions overlapped at many points with those of the doctor, the nurse and the safety officer.

1.3.6 The work of an occupational health nurse

Today, the work of the OH nurse is concerned with prevention, promotion, care, and restoration to health. Historically, the "industrial" nurse provided predominantly a treatment service for employees and was involved to a lesser extent in employee health assessment - often as the doctor's "hand-maiden" or assistant. The nurse was rarely involved in assessing the working environment and hazards within it, still less was she involved in health education - other than in a one to one advisory capacity. Today, in the eyes of many individuals- colleagues and employers alike, the image persists of the OH nurse having her/his main focus as treatment of the sick or injured. There was some variation, however. In the National Health Service (NHS) for example, the emphasis seemed to be on pre-employment, "medical" for new staff, often being health assessments undertaken by OH nurses. Many OH nurses working within the NHS and other service sector enterprises seemed to find that achievement of all aspects of their role was harder than for their counterparts in industry and commerce. Silverstone and Williams (1982) findings supported this view in that they found that OH nurses in the NHS were "a group differing most from the average". However, the situation since their study has changed markedly.

1.3.7 The education of the occupational health nurse

In 1983 the RCN defined OH nursing as simply giving a professional service to the individual at his place of work for the promotion of health, the prevention of physical and mental illness, the care of the sick and rehabilitation. The course syllabus for OH nursing, whilst open to wide interpretation, was geared towards producing effective practitioners who fully understood the effect of work on health, and the effect of health on the capacity to work. To this end the course curriculum was geared towards the promotion of health and the prevention of ill health, and accidents and injuries at work. The nurse's role was confined to health assessment and supervision, health education, counselling, environmental control, the organisation of treatment and rehabilitation services, liaison and referral, the organisation and maintenance of adequate record systems and their confidentiality and usefulness in epidemiological research.

1.3.8 Factors influencing occupational health nursing practice and education

Changes in the UK in the past twenty five years have affected industry, employment patterns, working and social life, standards of living, leisure, education, and both public and private health

services. The factors contributing to these changes include world market forces, political decisions, new policies and legislative changes, economic crises, demographic changes, technological and scientific advances, and social pressures (Radford, 1990). The nursing profession has itself been subjected to many pressures, difficulties and setbacks in this period. There have been internal and external reviews resulting in major proposals for the way forward and for the future education of nurses. The situation of OH nurses has been influenced by many factors beyond individual control. Although OH nursing practice has been advancing in some respects, there are still many practitioners without qualifications in the speciality, who fail to provide nursing services which are tailored to the real needs of the industry or enterprise in which they work. There is therefore a need to identify factors currently influencing OH nursing practice.

Bernhardt (1986) described factors influencing occupational nursing practice under the following headings: government (policy, priority change and funding); health care delivery system (high costs, drastic changes, hospital and ward stays, day surgery, more treatment in the community, the need for support, concomitant health effect, problem of equity, affordability, availability and access to health care, and utilization of health promotion, disease prevention services; industry (cost containment concerns, worksite disease prevention and health promotion programmes); the battle for autonomy and professional peer status in academia (the need for doctoral preparation for academic nurses); and nurse practitioners (primary care providers seeking autonomy and recognition, with the potential to provide more economical services).

Phillips and Radford (1990) also stated a number of factors which appeared to influence OH nursing practice and its development within different countries. These reflected both external and internal factors. The former included: the level of a particular country's industrialisation and development; the nature, extent, quality and availability of general health and social services; the nature of national and state health safety and welfare policies and legislation, and extent to which legislation was enforced; nursing status, the nature of basic nursing education and the presence or absence of content on OH and related subjects; the nature and extent of official (government) and other external sources of advice, support, guidance and assistance; and the extent to which nurses working in industries have come together and formed an active association or society which includes an effective communications network. The internal factors incorporated: the health needs of the working population and their specific needs in particular industries; the availability of specific education and training for OH nurses and of well qualified teachers; the supply of nurses available for work in industries; the ratio of doctors to nurses in the country and in industries in particular; the numbers, qualifications and status of other OH and safety practitioners. From these

three papers, although the factors influencing OH practice have been clearly stated, they fail to identify how these factors specifically influence OH practice.

1.3 9 Conceptual models for occupational health nursing practice and education

Many authors have provided a framework or conceptual model for OH nursing. These include the Continuing Education for Occupational Health Nursing (CE-OHN) Conceptual Framework Model (Gries, 1980), the Conceptual Model for the Occupational Health Nurse Clinical Specialist (Dees, 1984), the Conceptual Model for Occupational Health Nursing Practice (Morris, 1985), Honeywell Conceptual Model (Ossler, 1990), the Wilkinson Windmill Model (Wilkinson, 1990), the Lundberg theoretical model (Lundberg, 1992), the Maciag Group Model (Maciag, 1993), the Hanasaari Conceptual Model (Alston, 1990), and the Homeodynamic Self-Care Field Model (Yoo, 1993). The 9 models described here were the only ones that have been developed in the last 13 years. All of these models have been developed in the US except for two which were developed in the UK: the Hanasaari Conceptual Model (Alston, 1990) and the Homeodynamic Self Care Field Model (Yoo, 1993). Interestingly, the first models to appear in the UK were 10 years behind those developed in the US. However, the Hanasaari Conceptual Model (Alston, 1990) is more comprehensive, in that the emphasis on OH is more apparent, as is the team approach. The Homeodynamic Self-Care Field Model (Yoo, 1993) is, in contrast, more complicated to understand and apply. However, to date no practice based model has been developed from which OH nurses can gain a greater understanding and depth of knowledge.

The CE-OHN Conceptual Framework Model was presented by Gries in 1980. The focus of this model was the exploration of attitudes, beliefs, and values to begin an analysis of how and why continuing education is valued by the OH nurse. This model used the Roy's Adaptation Model concept as a basis for continuing education in OH nursing. However, this model was limited, dated and confined to continuing education. It does not provide an adequate framework for use in the wider context of OH nursing.

The Conceptual Model for the Occupational Health Nurse Clinical Specialist was generated by Dees in 1984. The purpose of this model was to present a conceptual framework for OH nursing clinical specialists which would be used to guide and direct nurses in the practice. This model was described in a language that was accessible to nursing staff, but it failed to describe clearly the impact of environmental influences on OH nursing practice.

Morris described a Conceptual Model for Occupational Health Nursing Practice in 1985. The model attempted to predict the quality of health care provided in the occupational environment.

However, roles overlapped and conflict in parts of this model along with macro environmental factors were not incorporated. Furthermore, the nurse's role was not described in detail.

The Honeywell Conceptual Model was presented by Ossler in 1990. The purpose of this model was to describe the challenges facing OH nursing over the next decade and define approaches to OH nursing practice that allow for its optimal contribution, ie cost-effectiveness, prevention and quality health and safety care for workers. OH nursing practice can be evaluated using this model, but the relationship between outside environmental influences and outcomes were not discussed in detail.

Wilkinson described a more dynamic Windmill Model in 1990. The main purpose of the Windmill Model was to depict clearly and comprehensively the interrelationships between the various parts of the model and to explain the critical role of OH nurses. This Windmill Model provided a simple and dynamic means of explaining the interaction of various outside environmental influences. However its weakness was its failure to show how to evaluate the outcomes of OH nursing practice. Again the nurse's role was not described in detail.

Lundberg in 1992 tried to develop an OH nursing theory. This model identified an expanding role for the OH nurse in any variety of settings. The processes were clearly defined. The role of the OH nurse within the team however, is not specifically addressed.

Maciag provided a different model of OH nursing practice to meet current and future health requirements within organisations in 1993. This model focused on the entire population of workers rather than on individual employees: based at the worksite focusing on OH issues and employees at risk. The author described a new proactive model moving away from the traditional models. However, the practice issues considered lacked specificity.

Alston (1990) generated a model from the raw material discussed in the Hanasaari conference and the framework a part of the English National Broad (ENB) syllabus for OH nurses in 1990. The model was discussed in relation to concepts and theories and their application to OH practice. However the model remains in a conceptual stage and does not address its potential for use in practice or education.

The Homeodynamic Self-Care Field Model (Yoo, 1993) illustrates that a healthy state is maintained by homeodynamic interaction between man and the environment through man's self-care ability in the time - space continuum from past to present. This is achieved with appropriate

support. The dynamic model would be extremely complicated as a practice model for OH nursing. There are conceptual inadequacies and further research is required to establish and examine the relationships.

1.4 Rationale for research

Over the past decade the emphasis of OH nursing practice has shifted considerably. The emphasis has moved away from the treatment of illness and injury, to practice with a focus toward primary prevention. OH nurses are now required to broaden their roles, skills and knowledge. This further strengthens the case for a model of OH nursing practice, dependent upon influencing factors, which recognise these changes and is responsive to the changing needs and expectations of the working population.

During the 1980's work on the development of some conceptual models gained momentum. Although some of the models have potential theoretical value, there is no single model which fits different settings or is able to relate OH nurses' roles and functions with their practices. It is timely and appropriate to investigate the practice in these areas and in this study.

Many authors offer a framework or conceptual model for OH nursing, e.g. Gries (1980), Dees (1984), Morris (1985), Ossler (1990), Wilkinson (1990), Alston (1990) Yoo (1992), Lundberg (1992), and Maciag (1993). However, practice-based models have not yet emerged. OH nurses are not only required to keep abreast of new developments in both their own practice and related OH fields, but are also forced to respond and react to continuing changes in the workplace and society. The relevance of the conceptual models needs to be explored and as it is important to examine these in the context of current OH nursing practice. There is also a need to identify the main factors which affect and influence practice in the context of the rapid changes taking place in OH. A new model is needed for OH nursing practice in the 1990's, as opposed to the conceptual models already devised which have not been validated or evaluated.

1.5 Statement of purpose

The purpose of this study was to carry out an investigation, the results of which would lead to the development of a new framework. It was intended first to gain an overview of OH nursing practice in the UK through a large scale survey of OH nurses. This overview facilitated the identification of the main factors currently influencing OH nursing practice and informed the construction of a framework in order to benefit future OH nursing practice.

Chapter 2. Literature Review

2.1 Introduction

Within this literature review concepts and terms related to OH nursing and OH services and programmes are discussed. Research-based studies on OH nursing practice between 1976 and 1993 are outlined and examined. Factors emerging from those studies, which potentially influence OH nursing practice are explored and extracted. Finally, a brief overview of existing models and frameworks for OH nursing is discussed.

This review is based on articles from OH and OH nursing literature as well as from currently available British theses and reports. Until recent very little research has been undertaken in OH nursing but it is important to examine and to review the OH nursing research available and other relevant research and information in order to understand the general state of knowledge about OH nursing.

2.2 Concepts related to occupational health nursing practice

2.2.1 Concept of occupational health

In this section the purpose, objectives and functions of OH is discussed, followed by an overview of OH programmes and services. The term "occupational health" as a concept has been used in definitions by many people. However, the term may be misused by many authors who refer to the term "occupational health" when they actually mean, for example, "OH services" or "OH programmes".

At its first session in 1950, the joint ILO and WHO Committee used the term "occupational health" for the first time and agreed the following statement.

> "Occupational health should aim at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention among workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological ability; and, to summarise, the adaption of work to man and of each man to his job."

As recently as 1990 Felton mentioned the mission, objectives and function of OH as being:

> · *Mission* :
> the conservation of human resources at the place of employment;
> · *Objective*:
> the improvement of worker productivity, morale and socially adaptive behaviour; and
> · *Function*:
> the assessment, preservation, restoration and improvement of the health of workers at the place of employment, with appropriate adjunctive activities to support this function.

What he actually appears to be describing are the mission, objectives and functions of a OH service.

An OH programme aims to promote and maintain the highest possible level of health amongst the gainfully employed upon whom the economic welfare of a community depends. The WHO defined the objectives of an occupational health programme in the *WHO Technical Report Series No. 535* (1973) as follows:

> · to identify and bring under control all the chemical, physical, mechanical, biological and psychological agents that are known to be or suspected of being hazardous;
> · to ensure that the physical and mental demands imposed on people at work by their respective jobs are properly matched with their individual anatomical, physiological and psychological capabilities, needs and limitations;
> · to discover and improve work conditions that may contribute to the overall ill health of workers to ensure that the burden of general illness in different occupational groups is not increased over the community level;
> · to educate management and work people to fulfil their responsibilities relevant to health protection and promotion; and
> · to carry out comprehensive in-plant health programmes dealing with man's total health, which will assist public health authorities to raise the level of community health.

The concept of OH can be ambiguous. Many use the term to refer to OH services or programmes. Therefore, to clarify what OH actually is, consideration of the aims and objectives of OH are important. The ILO/WHO (1950) identified five important aims of OH. In contrast, the OH service or programme can be considered as the structure within which these aims and objectives may be met. The WHO (1973) made this association clear by outlining several objectives relevant to developing a programme for OH.

2.2.2 Roles of occupational health nurses

The concept of the role of OH nurses is first discussed in general, emphasising the action of role senders and role receivers and the concept of role set. More specifically, the role components of OH nursing as detailed by a number of authors (RCN, 1985; Harrison, 1985; Radford, 1992) are

considered together with an alternative developmental perspective proposed by Rossi (1990) and Alston (1990). Despite numerous studies claiming to investigate or discuss the role of the OH nurse, very few actually specify what the roles of the OH nurse are without recourse to functions or activities. It is therefore often very difficult to ascertain from other studies what is meant by role and/or function, as few give working definitions of each of these terms. Functions of the OH nurse are then described, as given by WHO (1950), Lee (1978) and the Society of Occupational Health Nursing within the Royal College of Nursing (RCN, 1985).

Definition of Role

For the purpose of this study the following definitions of role, function and activity will be used to enable readers to differentiate between these related concepts.

"Role: A role is also a position in a social situation which has particular *functions* and *behaviour* associated with it." (Collins Cobuild English Language Dictionary, 1990).

Role is defined as a set of expectations applied to an individual or focal person in a position by the individual and by others having contact with this individual, that is the role senders (Neiman and Hughes, 1951). A role sender is a person occupying an independent position who interacts with the role holder or the focal person. The response of the focal person is observed by the role sender who expects certain types of reaction from the focal person.

Coser (1990) described a role set, that is the relationship a person has with people by virtue of his or her status and the social position of the various role partners. If the response demanded by the role sender is more than the expectation or capability of the focal person, stress results. Two types of stress were defined as role conflict and role ambiguity (Michaud, 1984). Role conflict occurs when an individual receives conflicting demands from other members of the role set and/or disagrees with them, being expected to do tasks that are not regarded as part of the job in the organisation or by being involved with a job that is against his/her personal values or beliefs (Sutherland and Cooper, 1990). Role ambiguity exists when an employee does not have an adequate job description or particular role expectation associated with his/her job. And therefore it is not clear what he/she is expected to do. Both role conflict and role ambiguity are related to job dissatisfaction and inappropriate organisational behaviour.

"Role" as performed individually in various situations is not performed only to meet the "enforced character by others" but is partly shaped by individual performance. However, role theory does seem to be useful in considering occupational health nursing. When a nurse holds a role as

occupational health nurse the main members of his/her role set are employees and employers. They function as role partners and to some extent as role senders. The employer is a primary role sender through the job description. The extent to which the nurse suffers from role conflict and role ambiguity depends on whether the role senders expectations agree with her own and the job description. The nurse's success in her role may be influenced by the extent to which the expectations of employees and employers are met.

Thus in the OH nursing setting the position of the nurse, employee and employer can generally be distinguished as the roles of provider (nurse) and receivers of the nursing service (employee and employer). (Yoo, 1993)

Roles of occupational health nurses

According to the RCN-SOHN (1985) there is wide variation in the roles performed by OH nurses but they suggested that these can be divided into three sections: professional, managerial and educational. The professional role included the following responsibilities: confidentiality, prevention, immunisation, counselling, environmental, disaster planning, treatment (e.g. emergencies, routine treatment in certain situations and rehabilitation and resettlement), records, compliance with the Medicines Act. The managerial role included main responsibilities such as being in charge of an OH nursing service, and other responsibilities such as workplace visits, policy and planning, information sources and legislation. The educational role included responsibility for health education, personal health, health and hygiene related to work and first-aid training.

More recently, Alston (1990) divided OH nurses' roles into two categories: the traditional role with responsibility for treatment, supplies, information, records, health screening and remedial environmental action, and the emergent role with responsibility for health surveillance, environmental surveillance, health education, records and data, management and research. In this study there was no specific definition of roles and there was no mention of the OH nurses' training, consultant and advisory roles.

Rossi (1990) described the roles of the OH nurse as progressively changing at various stages of the development of OH nursing in the follow. Stage I - The assisting role included curative treatment, first-aid, health education, individual hygiene, social service. Stage II - The independent role included workplace visits, screening of common diseases and physical work capacity, vaccinations, health education, counselling, and "monodisciplinarity". Stage III - The collaborative role included workplace surveys, health examinations, work-related health education, hygiene and

ergonomics in the workplace, and teamwork. Stage IV - The unique role included comprehensive health education and promotion, active proposals, mental health care, rehabilitation, research, specialisation, and multidisciplinary endeavours.

2.2.3 Functions of occupational health nurses

Similar problems are encountered when an attempt is made to identify the functions of the OH, as outlined in the research literature. Again, few studies define "function" as a separate concept from role, activity or duty. It is however apparent that in general the proposed number of functions of the OH as described in the literature is greater than the proposed number of roles.

Definition of function

For the purpose of this study the following definition of function will be used to enable readers to differentiate between these related concepts.

"Function: If something or someone functions as a particular thing, they fulfil or perform the *purpose* or *role* of that thing." (Collins Cobuild English Language Dictionary, 1990)

Functions of occupational health nurses

The functions of an OH nurse have been listed by the *WHO Technical Report No.24* (1950) as follows:

- carrying out the therapeutic programme designed by physicians for sick patients,
- maintenance of the physical and psychological environment conductive to recovery and health,
- engaging the patient and his family in his recovery and rehabilitation,
- instructing people, sick and well, in promoting total health (physical and mental) in a positive sense,
- carrying out measures for the prevention of disease, and
- coordinating nursing efforts with other members of the health team.

This description focuses on sickness and still use word "patient". It also mentions team work, promotion and prevention, but does not mention environmental or social factors.

According to the RCN-SOHN (1985) the functions of the OH nurse are as follows: health supervision at the place of work, health education, occupational safety, environmental monitoring, counselling, the organisation of an emergency treatment service for accident and illness at work, provision of a routine treatment service, rehabilitation and resettlement, administration of the OH unit, including the development and maintenance of records; and co-operation with outside

agencies. These functions are quite broad and there is no specific mention of health promotion, health surveillance, health screening, communication within the company, first-aid training for workers and immunisation.

2.2.4 Summary

The role of the OH nurse can be considered in the context of the relationship between role sender and holder, where conflict and ambiguity can result in various degrees of experienced stress or strain. Job descriptions and expectations are two important issues which need to be clarified in order to circumvent role confusion. As the nurse is seen as the provider of a service to which both employees and employers have access.

Regarding specific role components, the RCN-SOHN (1985) describes three major roles as professional, managerial and educational, and outlines the responsibilities of each. Alston (1990) simply divides roles into two types - the traditional role and the emergent role. This emphasises how the concept of the roles of the OH nurse are changing. In a more developmental context, Rossi (1990) outlines how the role of the OH nurse evolves through stages from that of novice practitioner to advanced practitioner. Finally, the functions that the OH nurse performs have been variously described, either generally or in more specific terms.

2.3 Research-based studies on occupational health nursing practice

2.3.1 Introduction

It was important to examine and to review the OH nursing and other relevant research in order to understand the general state of knowledge about OH nursing practice. All articles were found from a search of OH and OH nursing English-language literature as well as from British theses and reports available. In this section only research-based articles on OH nursing practice and related topics between 1976 and 1993 will be outlined and examined. 25 articles in total will be reviewed here, including 12 from the UK, 11 from the US, and 2 from other European countries. With regard to the types of articles there are 18 published papers, 5 theses, and 2 reports. Before discussing related issues a brief outline of these studies will be presented first, in chronological order, so that the findings can be understood in context.

2.3.2 Studies in the UK

The first relevant research-based study in the UK was commissioned by the Health and Safety Commission (HSC) in 1976. The Employee Medical Advisory Service (EMAS) conducted a

survey in order to review OH services in Great Britain. 3383 out of 226 410 firms took part in completing questionnaires and interviews and provided information about the number and type of services available, and the number and type of staff employed. The overall response rate was 88%. 85% of firms provided no OH service; 5.5% of firms employed medical and/or nursing staff; and 2.5% of firms employed both medical and nursing staff. Size of firm was a dominant factor, where small firms did not provide a service other than perhaps a doctor on call. In contrast larger firms often employed doctors and nurses. The nature of the industry did not appear to be a very important factor but the distance from the NHS facilities was. Most of the doctors employed were in charge of the service regardless of whether or not they are full or part time. A minority of services were the responsibility of a nurse, sometimes a State Registered Nurse (SRN). Of the full time doctors employed in OH work 42.4% held specialist qualifications (e.g. DIH or MSc in OM), in contrast to 13.2% of part time doctors. Similarly, 19.6% of full time SRN's held specialist qualifications (e.g. OHNC) whereas 16.7% of part time SRN's did. A frequent activity appeared to be the treatment of acute emergencies and minor illnesses and injuries, but this was slightly less so for the firms within one mile of a NHS hospital. 11% did not provide any other service than this treatment service. Another frequent activity was medical examinations and screening procedures, and 3.5% did not provide any other type of service than this. This survey gave the whole picture of OH services in that time and attempted to identify contributing factors towards the nature, functions and distribution of existing services. However it can not answer any specific questions, especially for OH nursing practice.

In 1982 Silverstone, a sociologist, completed a PhD thesis designed to gain more information about the current role of OH nurses and their educational needs. With a 49% response rate, 289 subjects from Scotland, the North of England, the West Midlands and part of London completed questionnaires. Rated 43 tasks grouped into 11 functions were assessed in two ways: nurses involvement (i.e. actual) and the degree of importance considered (i.e. ideal). Heading the list were 87% involved care of the injured, 85% listening, 84% care of the sick, and 73% giving advice. The activities considered the most important were 92% listening, 87% giving advice, 86% care of the injured, and 85% care of the sick. The functions that were considered important were also those most commonly involved in. Further training most mentioned by OH nurses were counselling (18%), ophthalmic nursing (13%), audiometry (7%), toxicology (6%), and health and safety legislation (5%). This study was able to isolate what important functions and activities were and what nurses had involvement in. It can also state future educational needs from this and, therefore, can make some comments. Unfortunately, some categories were misclassified, e g. vocational under counselling and research under employee protection, and it was looking at

activities and functions not roles. In addition, it was not a representative sample and response rate was under 50%. Thus the findings from this study should be viewed with some cautions.

In an interesting study investigating the relationship between the NHS and OH services, McEwen *et al.* (1982) examined the factors which influenced treatment referral, including communication between general practitioners (GP's), accident and emergency departments and other hospital departments. Information was provided from a total of 20 organisations making up 23 distinct units with separate OH services in the Nottingham area. They found a lack of contact between OH services and the NHS. Less than 2% of contacts resulted in referral to hospital and 10% in referral to general practice. Referral rates were higher first thing in the morning and at the beginning of the working week, indicating that many patients preferred to wait and consult the OH services before contacting the GP. Only rarely were patients referred to the OH service for specific items of treatment. It was suggested that improved communications would reduce misunderstandings, improve patient care and lead to greater staff satisfaction. This is a very interesting study into a relevant area not often considered. As the response rate was not mentioned in the article it is difficult to say how representative these results are. More could have been gleaned about the reasons why the NHS did not appear to refer patients back to the OH unit.

Lim (1983) compared OH nursing services in two countries: the UK and Malaysia, mainly regarding activities carried out and training and qualifications. Information was gained by postal questionnaire directed to nurses in two specific areas - one in each country: Avon in the UK and the Klang Valley (a highly industrial area) in Malaysia. Surprisingly, the response rates from each country were relatively high, with 82.4% (89/108) responding from the UK and 83.9% (73/87) responding from Malaysia. Generally, in both countries the main nursing activities appeared to be treatment services (contrary to the preventative role of the OH), medical examinations and screening procedures, counselling, safety inspections and administration. The activities of OH nurses in each country appeared to be similar but the training and qualifications held by OH nurses varied greatly between them, with more nurses in the UK holding special qualifications (1.3% in Malaysia, 60.5% in the UK). Unfortunately the format of the questionnaire was not described in detail and some questions were not very specific. For example, when asked to indicate if they performed certain activities regularly, there was no explanation given as to the meaning of "regularly" in this context. The accuracy of the data obtained is therefore suspect. Also, regrettably, the article does not address in detail the industrial setting, economic situation, legislation, health care delivery system, political, social and cultural differences between the two countries and how they might have influenced the findings.

In an attempt to analyze the functions and activities of qualified OH nurses who held OHNC, Balcombe (1983) gained information from 143 students who had graduated from Manchester Polytechnic. The method of data collection was twofold, namely via postal questionnaire (79% response rate) and completion of daily charts. Seven major activity areas were identified and ratings of the time spent on these activities was established. From daily chart analysis it was found that the most of OH nurses' time was spent on the following functions and activities: direct contact with patients or clients (57%), environment issues (16%), teaching (5%), liaison (4%), departmental administration (5%), professional development (5%), and other activities (8%). This was a descriptive study with little discussion of relevance to practice. However it provides useful baseline data on a group of OHNC qualified nurses.

To assess the continuing education needs of OH nurses, a preliminary survey was conducted by Bamford (1987) in the West Midlands and resulted in a response rate of 71 out of 100 individuals (who returned a postal questionnaire). Data from this questionnaire enabled the researcher to describe the types of organisations (manufacturing 57.7%, professional and scientific 25.3%, service 9.9%, public administration and defence 2.8%, miscellaneous 2.8%, and distributive trades 1.4%) where nurses in this area worked, their previous qualifications (Enrolled Nurse (EN) 9.9%, EN with Part I or Occupational Practice Nurse Award (OPNA) 8.5%, Registered General Nurse (RGN) 21.1%, RGN with Part 1 or OPNA 8.5%, RGN with OHNC 52.1%), experience (the majority of nurses had 6-10 years in OH nursing 28.2%, or 1-5 years 25.4%), and training (MSc 1.4%, RGN with additional qualifications 8.5%, Part I - OPNA nurses with additional qualifications 4.2%, nurses with the OHNC with additional qualifications 12.7%) already received, and about other members of the OH and safety team (97.2% had access to a doctor for advice, 28.2% had full time support from doctors, 69.0% had part time support, and 2.8% had no support. And 20% worked alone, 21% worked with first-aiders, 29% worked with other nurses, 14% worked with other specialists.). Like the previous study by Balcombe (1983), this was a preliminarily descriptive study only. However this was the first study to emphasise the importance of continuing education for those working in this specialist area of nursing.

In a large survey study, spanning 202 Health Districts in England and Wales, Kazem (1987) looked at the relationship between OH services in the NHS and the degree to which they were integrated with local authority services. This involved an assessment of current (beginning in 1985) OH services and the basis for any changes in relationships. With a response rate of 74.7% (151/202) to postal questionnaires, Kazem (1987) was able to describe the state of OH services in 1985, acknowledging the medical, nursing and clerical staff, and s/he was able to compare data with that obtained in a previous survey conducted by the EMAS (HSC, 1981). In 60% of 109

districts in England and Wales where local authorities did not set up their own independent OH services, services to local government were still provided by the community health doctors. There were a notable increase in the number of doctors with OH qualifications (24.7%) compared with EMAS (13% in 1981). The number of OH nurses with OHNC was also increased from 38% (HSC, 1981) to 44% in 1985. However 18 out of 151 departments still had no nurses with qualifications in OH nursing. This survey was able to describe OH services in the NHS only. Although the response rate was acceptable, the non-responders should not be ignored.

Dorward (1988) was concerned with the continuing education needs of nurses who worked in occupational health in Great Britain. Out of 392 OH nurses 270 (68.9%) were selected from the EMAS informal register, and responded to a postal questionnaire. 51.1% of the sample was found to hold the OHNC qualification in 1988. Subjects of continuing education (very interested) were legislation (67.8%), social concern (62.2%), professional philosophy (55.0%), health promotion (53.7%), occupational hazards (53.7%), clinical skills (51.5%), occupational health (51.1%) ,while subjects of continuing education (attended) were occupational health (71.1%) and clinical skills (54.4%). It was suggested that OH nurses having a positive attitude to continuing education were able to be more effective in their jobs.

The purpose of the study conducted by Sharp *et al.* in 1989 was threefold: to assess the effect of recent perceived changes in British industry and economy on OH nursing in the UK, to update information about patterns of OH nursing practice since the EMAS survey in 1981 (HSC, 1981), and to compare how OH nurses perceived their roles in 1989 with those in 1981 and whether there were any differences in how they actually spent their time. Like the EMAS survey, information was obtained from OH nurses working in the South West Region - namely those known by EMAS to be working in Gloucestershire, Avon, Somerset, Devon and Cornwall. A total of 242 nurses, out of the 269 (90%) approached, agreed to participate and complete a series of self-administered questionnaires. The findings appeared to reflect recent changes in British industry and economic climate as expected, although these were not made explicit in the report. For example, the traditional industries of aeronautical engineering and food, drink and tobacco employed less OH nurses than previously, which reflected a reduction in their workforce but the NHS appeared to be the leading employer of OH nurses in these South West districts. Furthermore, these illustrated a greater nurse involvement in a number of work related areas of health care, including prevention of ill health and control of the working environment. However, there was similarity among the rankings of duties (time spent) and their ratings of importance between this survey and the 1981 survey. Most of time was spent on the duties of treatment, administration and medical examination, but medical examination, treatment, environmental surveillance and counselling were

thought as the most important duties. Further training was considered of importance by 67% of OH nurses, especially for treatment related subjects, environmental surveillance, and counselling. Because of the geographic location of the sample surveyed and the type of industry represented in the area, these results cannot be said to be necessarily representative of events occurring in other areas of the UK that rely on different industries. This study was, however, able to make valid comparisons with the 1981 EMAS study - both showed good response rates and amassed a large amount of data. It also suggested a number of further improvements such as the need for local training opportunities and reached a positive conclusion regarding previous recommendations, for example, it was interesting to discover that the comments put forward in 1981 suggesting that nurses become more involved in first-aid training, counselling and health education appear to have been heeded.

More recently, Alston (1990) examined some of the psychological themes concerning roles and attitudes in order to identify areas of role overlap and conflict with other members of the OH and safety team. Forty individuals from three groups - OH nurses, managers and safety personnel were approached to take part in this study, with the following response rates 82.5%, 85% and 60% respectively. Although some of the participants understood the behavioural aspects of their role, much of what were identified as role objectives was in fact related to functional tasks. Behavioural aspects of OH nurses work was reflected in their roles in relation to facilitating health promotion and to interpersonal skills. Safety personnel recognised advisory and promoting elements of their role, and managers identified significantly with a monitoring role. Role overlap occurred where a team approach was required. Communication problems were highlighted as a difficult area. Conversations about environmental activities produced responses which indicated that cooperative efforts were more in evidence than conflict situations. Unfortunately, there was no mention of how the sample was selected or where the respondents came from. Furthermore, parts of the questionnaire appeared to be ambiguous in that, although some study participants appeared to understand the behavioural aspects of their role others identified role objectives as functional tasks. Also, some role categories were not very clearly defined as roles, for example, one being "recording" and another being "records supplied".

In the same year, Dorward (1990) set out to compare the perceptions held by OH nurses and their managers concerning the roles and continuing education needs of OH nurses. The study respondents were 117 nurses (82.4% response rate) and 66 managers (77.6% response rate) in Scotland. They completed questionnaires in which they were required to rate the primary importance of a number of issues relating to the concepts studied. Primary importance rating of functions by OH nurses were health promotion (81.2%), health supervision (76.1%), records and

reports (68.4%), liaison and co-operation (60.7%), health surveillance (59.0%), administration (54.7%), accident prevention (51.3%), counselling (51.3%), first-aid provision (49.6%), rehabilitation (49.6%), treatment (47.9%), research (12.8%). Continuing education subjects with which OH nurses "strongly agreed" were health promotion (76.9%), OH (76.9%), screening and health assessment (72.6%), health and safety legislation (71.8%), occupational hazards (70.1%), communication (68.3%), social concerns (65.8%), teaching (63.2%), clinical skills (60.7%), professional matters (57.3%),' man management' (41.0%), staff and personal development (33.3%), research (29.9%), and administration (27.4%). Although the researcher intended to study the *role* of the OH nurses the results appear to be a study of the functions of OH nurses and not their roles.

Finally, Yoo (1993) examined OH nurses', employers' and employees' expectations of OH nursing services and their evaluations of these services. Nurses were recruited to the study via the RCN-SOHN and access to employees was gained through the nurses so that those who had visited the OH department more than once in the previous year were approached to participate - which may have biased the sample. The response rates of the employees (51.3%) and employers (45.0%) were lower than that of the nurses (66.6%). It is possible that only those with a positive attitude responded. This study is the first to compare the different perceptions of the employee, the employer and the nurse, and raises a number of issues regarding the different expectations held between these groups. The main findings of this study were as follows. 1) Positive correlation between expectations and evaluation, i.e. their expectations for the OH service were met. 2) Age, education and working conditions may all influence what is expected and what is provided. 3) Levels of expectation varied between the groups studied. 4) Nurses did not perceive themselves as meeting their own high expectations as well in the non-traditional services as in the traditional care-oriented services. It was also found that "care and treatment" was the one aspect of care where nurse's expectations were lower than those of the receivers of care. 5) OH nursing services can be divided into two kinds of nursing services: traditional nursing services - care and treatment, health examinations, and health records, and non-traditional nursing services - visits to the workplace, preventive health services, employee rehabilitation, and expanded service. 6) The ranking of the nurses expectations for OH services were: health records, visits to the workplace, health examinations, employee rehabilitation, preventive health services, expanded services, and care and treatment. The ranking of the nurses evaluations for OH services were: health records, employee rehabilitation, visits to the workplace, health examinations, care and treatment, preventive health services, and expanded services.This is the first study in the UK which attempted to compare the expectations and evaluation of OH nursing services as perceived by three groups, using an analytical approach. However, since access to employees and employers was gained

through the nurses, this could have biased the sample because the employers and employees who responded could have had more positive expectations and evaluations than those who did not respond. Therefore the results from this study should be viewed with some caution.

2.3.3 Studies in the USA

In 1983 McKechnie investigated how four specific factors were related to a number of functions performed by OH nurses. These four factors were the size of organisation, the type of business, the length of experience, and the level of medical supervision. McKechnie (1983) used Frust and Martin's core functions as criteria for the performance of certain duties. Information was gained via mailed questionnaires and 48 out of 63 were completed altogether yielding a 76% response rate. All respondents were volunteers working full-time in one-nurse units in Chicago and Milwaukee. The main finding of this study identified the core functions of OH nurses. These were: co-operating with other professionals (91.7%); counselling (87.0%); health education (83.3%); care of occupational injuries of illness (79.5%); care of non-occupational injuries of illness (76.2%); health examination (76.1%); social health programmes (68.1%); utilizing community resources (63.8%); making rounds (59.6%); and administration (37.5%). The major conclusions reached were that there appeared to be high performance levels, but that none of the four factors described above were related to any of the core functions.

Attempting to clarify what OH facilities existed in South Carolina and the role and distribution of OH nurses in industrial settings, Chovil *et al.* (1984) gained information from 634 "plants" (53% response rate). As the size of the plant increased so did the number of RNs employed (i.e. 3% of small plants - 89% of large plants). Overall 27% of plants had access to a RN service and more licensed practical nurses (LPN's, with one year of basic nurse training) are employed in small plants. The majority of physicians did not visit the plant and 10% of the plants did not appear to have any relationship to a physician. With regard to nursing activities no direct measure was available. 14% of plants indicated that an increase in nursing service was needed and the type of industry expressing such views was predominantly the textile, paper, and petrochemical ones. The role of the nurse appeared to be perceived as variable from the traditional "physicians hand-maiden" to the expanding, more specialised one. Unfortunately, no details were given as to who completed the questionnaires regarding plant activities. Furthermore, the type and size of categories making up the questionnaire were heterogeneous, limiting conclusions.

In a similar study, Levinsohn (1984) attempted to find out how OH nurses perceived their role and to ascertain their educational needs of the nurses belonging to the Texas Association of Occupational Health Nurses. The response rate was 32.3% (248/768). Reasons for being attracted

to OH nursing were salary and hours (37.4%), independence and challenges (15.2%), working with well people (10%), variety of tasks and broad scope of practice (9.6%), disease prevention work and health teaching (8.3%), etc. Of the respondents 93.3% were either extremely satisfied or satisfied with their career. Most time was spent on individual care and record keeping and less time in primary prevention, counselling, and health teaching. Record keeping, treating illness and injury and follow up care, administration of medication, counselling were activities carried out by over 90% of the nurses and budgeting; home visits; supervision of other staff were the least likely to be involved. 51% of the nurses worked with less than three other health care providers, 41% with no physician, and 39% with one physician. Their education and professional development were found as follows: 84% had taken part in an educational programme within the previous year; employers had paid for education for 85.7% of the nurses; interest in education was strong for 73.9% and moderate for 18.3%; topics of interest included legal aspects of work, counselling skills, occupational hazards and illness, stress management, emergency care, compensation laws, accident prevention, alcohol and drug abuse; and courses of interest included bachelor's degree (33%), master's degree (21.3%), certification programmes (45.7%). Although this study appeared to achieve its aims, the response rate was very low, for no apparent reason. The relevance of findings concerning educational needs is limited because the educational system and professional development of nurses is very different in the US compared with the UK. Also, because these respondents worked in Texas, predominantly for large companies in the petroleum industry, the significance of these results is again limited.

Another interesting study was conducted by Conrad *et al.* (1985) who were interested in comparing job satisfaction among OH and hospital nurses, and to establish a profile based on the demographic and the personal characteristics of OH nurses. After collecting data from a random sample of 150 (out of 550) OH nurses, belonging to a state association. The response rate was 73%. In general, OH nurses were older, more experienced than the hospital group, and three times as many had received a baccalaureate education. Overall the OH nurses were not found to be more satisfied with their jobs than the hospital nurses. But there were group differences on some subscales. The OH nurses were more satisfied with compensation, creativity, and independence, while the hospital nurses were more satisfied with advancement, authority, coworkers, responsibility, security, and technical supervision. The most satisfying aspects of OH jobs were considered to be social service, moral values, independence, achievement and activity. The least satisfying aspects of OH jobs were: limited advancement opportunities, inadequate company policies, practices, compensation, technical supervision and insufficient recognition. On this basis, the authors were able to suggest ways in which OH nurses can raise their profile and increase their job satisfaction and avoid unrealistic job expectations. Although previously valid and reliable

questionnaires were used and clear definitions provided, the normative data were based on information obtained between 1965 and 1967 making it difficult to interpret findings that are so dated. Moreover, the groups were not matched on age, years of experience or on educational attainment. Finally, the sample was taken from the members of a state OH nurses' association, and consequently the results may not be representative of other OH nurses in the USA.

Two similar studies, one by Cox (1985), the other by Atherton and LeGendre (1985) were concerned with programme development and functional job descriptions, respectively. In Cox's study (1985) the aim was to develop a profile to support the rationale for programme development and to compare data with previous statistics of the American Association of Occupational Health Nurses (AAOHN). A response rate of only 49% was achieved after random sampling of 1,000 AAOHN members. The general picture revealed that 24% of the OH nurses worked in larger companies with more than 3,000 workers, 29% in a company with 1,000-2,999 workers, 25% in a company with 500-999 workers, and 22% in smaller companies with less than 500 workers. Of the nurses studied, 69% were employed in an industrial setting and 16.9% worked in corporate offices. Other work settings cited were institutional (5%); government agencies and military (4%); and college health centres (1%). The nurses profiles revealed that 93% were female, 20% were RNs with a baccalaureate degree, 6% were RNs with a masters degree, 73% were more than or equal to 41 years old, and 30% had one to five years' experience as an OH nurse, and 27% had six to ten years experience. This group was similar to the AAOHN membership and therefore could be assumed to be representative. Types of companies where the OH nurses worked were: industrial setting (69%); corporate offices (16.9%); institutional (5%); government and military agencies (4%); and college health centres (1%). About half of the companies offered employee health promotion and maintenance programmes including: 67% drug, alcohol, and smoking programmes; 61% screening for heart disease or stress; 56% diet and nutrition programmes; 49% cancer screening and health education; and 41% physical fitness programmes. Most of OH nurses worked during day time shifts. More than 50% did not have the support of a full time physician. However, where medical support was available 55% of this time was only provided on a part time basis. The nurses' reporting lines varied: 39% of the nurses were responsible to the personnel department; 23% to the medical director; and 20% to a supervisory nurse. With regard to their OH nursing activities, 87% of the nurses followed protocols for treatment and dispensing medications and 56% accepted responsibility for medical surveillance, as required by the Occupational Safety and Health Act (OSHA). Of the time spent each day on specific activities, 49% was spent providing employee services such as counselling, assessment of health conditions, referring and screening employees, 16% on supervision and administration activities, 12% on developing and conducting health education programmes and 22% on environmental assessment and monitoring.

However, the summary of overall findings was selective, in that, programme development was not discussed and it is difficult to discern to what extent this study achieved its goals.

In Atherton and LeGendre's (1985) study the authors were able to identify "common practice" elements as a basis for writing a functional job description for nurse practitioners' roles in OH settings, after gaining information from a convenient sample of 63 nurse practitioners working in the district of Columbia. Job responsibilities for the nurses included pre-placement comprehensive physical examinations, annual physical examinations, diagnosis and treatment of acute minor illnesses, emergency responses, educational programmes, counselling, monitoring for hazardous exposures and administrative duties. However, the findings from this descriptive study cannot be generalised because of the small sample size and the "convenient" sampling method used to recruit respondents.

Of the 5 articles cited from 1985, two of the most interesting were presented by McGovern *et al.* (1985) and Christensen *et al.* (1985). The aims of these studies were to provide information about the employment patterns, roles and functions of master's-prepared OH nurses. Part I was to show demographics, education, work experience, employment patterns, and occupational roles and functions for all masters degree graduates. Part II focused on those graduates who were employed in OH settings and was designed to show how and where they contributed to the health care system, to demonstrate the demand for master's-prepared OH nurses, and to question whether they were being utilised properly. The study subjects who were recruited were 121 OH nurses who graduated between 1978 and 1983 from the 11 National Institutes of Occupational Safety and Health (NIOSH) which had sponsored Education Resource Centres. A self-administered questionnaire was sent to 113 valid subjects, and of these 73 responded. The response rate was 64.5%. Of the 73 master's prepared OH nurses, 71 were female and two were male. Among them 51 were employed in OH settings, 19 were in non-OH settings, and 3 were unemployed. Over 70% reported that their positions were administrative in nature, such as supervisor, director, consultant or coordinator, whereas 30% described their position as "staff". Of the total group, 30% reported functioning as a nurse practitioner and included the provision of direct care. Their major responsibilities were education (38%), management (29.6%), direct care (29.6%), consultation (28.2%), and programme development (24.3%). The average level of their participation in policy making was low, and only moderate regarding programme planning and development decisions, or programme implementation.

Of the 51 graduates who were employed in OH settings, 75% of this sub-group stated they were in an administrative position, and were not providing direct care. The major responsibilities were

shown as education (66.7%), management (62.7%), consultation (58.8%), programme development (52.9%), direct care (45.1%), liaison (39.2%), and policy making (29.4%), etc. It also indicated a high degree of participation in matters influencing health and wellbeing. In terms of 20 roles and functions the highest levels of involvement in policy were health promotion and wellness, health education, and programme development. The highest levels of operational involvement were health education, health promotion and wellness, health assessment, surveillance, primary care, and programme development. The lowest levels of policy and operational level involvement were computers (in data processing) and information management, health insurance, budget, and loss analysis. Consequently individuals highly involved in policy formulation were more likely to be highly involved at the operational level ($r = 0.72$, $p < 0.001$). Furthermore policy level involvement was related to the number of credits obtained on certain courses (i.e. programme evaluation methodologies, principles of management, planning and administration of employee health service programmes) and operational level involvement was related to the number of credits obtained in physical assessment skills courses. However, many new programmes in OH nursing have commenced in the US since 1981 and this situation must have changed considerably. The small sample size of the sub-group employed in OH settings ($n = 51$) limits the identification of important variables and the conclusions reached. Regarding the questionnaire, no definition was provided for "operational" or "policy making" level, "roles" or "functions" when respondents were asked to comment on these issues. This study also raised some important issues concerning the future education needs of OH nurses relating to the needs of employers.

With a clear outline of research questions dealing with the topic of nurses' and managers' perceptions of OH nursing, Bey *et al.* (1988) studied responses from nurses and managers in a Fortune 500 manufacturing company. The response rate from nurses was 63% (26/41) and from managers was 60% (15/25). Open-ended questions were used as well as close-ended ones to enhance their data. Nurses and managers had very similar perceptions of the nursing role. Both groups placed the traditional function of direct employee care as their highest current and ideal priority. Nurses and managers ranked environmental hazard recognition and control as a very low priority. This may be because Occupational hygienists are more common in industry in the USA and take on this responsibility. Both groups viewed the incentives for role expansion, continuing education and additional clerical support staff as desirable and early retirement as desirable. However, the rating scale may not have been very sensitive to differentiations.

In an impressive study, Lusk *et al.* (1988) investigated whether executives of major corporations were interested in having nurses extend their role and engage in more advanced activities, and if so, to what extent they would provide or support advanced educational preparation for these

changes. Approximately 400 of the executives belonging to the Forbes 500 corporations (representing the top 500 companies in sales, profits etc) were approached to take part in this study, 229 of which participated (57% response rate) giving rise to 173 valid responses. Functions nurses performed varied by size of the corporation and by type of industry. Activities which corporations would like the nurses to perform were more advanced, such as conducting research, analysing trends and developing special health programmes. The most frequently reported activities OH nurses performed were listed as - supervising the provision of nursing care for minor illness episodes (89.7%), counselling employees regarding health risks (87.7%), and providing follow up of employees with workmen's compensation claims (67%). RNs were the largest proportion of personnel employed with health care departments. They were also employed by a higher percentage of corporations than any other member of the team (90.2%). Although the results indicated support for advanced practice and education, it should be noted that the executives sampled were not necessarily involved directly with health-related departments making the findings somewhat theoretical. Nevertheless, this study makes an important contribution to the literature with its detailed description of methods and questionnaires.

In a recent concise survey, Scalzi *et al.* (1991) identified the amount of time OH nurses spent on performing specific duties and responsibilities, and how important they were perceived to be. Members of AAOHN's Corporate (Directors) / Executive Special Practice Group were invited to participate and of the 72 approached, 33 responded, giving a low response rate of 45.8%. There was a high association between scores for importance and the time spent performing specific duties and responsibilities ($r = 0.92$). This indicated that Corporate OH nurse's allocated their time to specific activities appropriately and according to the importance. Core responsibilities for OH nurse managers included policy making, practice standards, quality assurance, staff development, and development of systems for care delivery. Marketing OH services or evaluating cost and benefit performance measures was not given high priority as expected, considering the relevance attached to these activities. Eleven curriculum areas were identified from the 51 items (in time spent, ranked order) including law and health care policy, business strategies, organisational behaviour and politics, quality assurance, management information systems, marketing, risk management, ethics, clinical nursing, human and material resource management, and financial management. Recommendations for OH nurse managers' preparation included education about health policy, programme planning and evaluation, business strategies, the application of management information systems, quality assurance, and marketing. There was the common problem with survey data - subject selection bias. Nevertheless, the authors were able to make recommendations about curricular activities and OH managers' preparation from the clear and unambiguous data they collected.

2.3.4 Studies in other European countries

In a novel approach to studying issues in OH nursing, Rossi (1987) collated information from 24 different countries in an attempt to understand the worldwide concerns of OH nurses. Information was gained by questionnaire from the following countries: Ireland, the UK, Belgium, France, Italy, Greece, the Federal Republic of Germany, the Netherlands, Sweden, Norway, Finland, Denmark and Iceland; only Luxembourg did not return the questionnaire. One individual, either a physician or OH nurse, belonging to the International Commission on Occupational Health (ICOH) in each country was selected as respondent. Information from the other eleven countries represented in this descriptive study (Australia, Canada, Japan, New Zealand, Nigeria, Poland, Spain, South Africa, Tanzania, the United States and Luxembourg) was gained from either lectures, conferences, observation, interview, or from articles and bibliographies. Interesting differences and similarities are discussed. The main findings were: 1) OH nurses did not understand health examinations in some countries, i.e. it was the physician who examines the employees; 2) the training of the nurse and the legislative situation in that country may affect nurse independence; 3) in general, the main principles, goals and practice of OH nursing seemed to be quite similar everywhere; 4) the majority of time was spent on prevention except in Iceland, where the majority of time was spent on primary care. Although the validity of the data is questionable, this study provides some insight into the diversity of the role of OH nurses across different cultures, countries and different settings.

In a similar study, Rossi (1991) again attempted to compare OH nursing issues across countries. This time a more selective sample was considered, in that, only the Nordic countries of Denmark, Finland, Iceland, Norway and Sweden were studied concerning OH services. Only one to two people from the various countries were invited to participate in the working group, representing either authorities or experts in the field. The main findings were: 1) OH services in the Nordic countries started as initiatives of single industrial enterprises; 2) coverage of employees ranged from an estimated 23% of employees to 93% in Finland; 3) contents of OH services in the Nordic countries corresponded mainly with the ILO Convention on OH Services (1987) - the services were primarily directed to preventing work-related problems and to achieving a better work environment; 4) employers were responsible for the total cost of OH services in all Nordic countries, but each had state reimbursement to help cover the costs. It is, however, difficult to say what the precise source of some of the information from each country was, as this is not made explicit in the report. It is made clear that the descriptions are based on current information available to the author. This study is interesting in that it highlights the similarities across these countries with regard to services provided and gives some information about the historical background which may be of interest to others familiar with the relevant history of other countries.

2.3.5 Methodological issues

All research entails difficulties, and scientific interpretation requires an assessment of strengths and weaknesses of each study. It can be seen that there were some common weaknesses in the previous studies of OH nursing practice. These included, potential selection bias, inadequate sample size and poor response rates, various characterisations of OH nursing practice, inadequate attention to potential confounding factors, and insufficient hypothesis testing.

Potential for selection bias

A key issue in descriptive studies is the potential for selection bias, that is, the representativeness of the study population. In a large number of the descriptive studies the investigators selected the study population for convenience, which resulted in the selection of either specific types of group, or groups of people working in specific geographical areas. For example, some of the UK studies have been undertaken using selectively regional samples of OH nurses. These have included Scotland, the North of England, the West Midlands and parts of London (Silverstone, 1982a), the West Midlands only (Bamford, 1987) and the South West regions of England (Sharp *et al.*, 1988). There have also been some studies of special groups such as the OHNC qualified nurses who graduated from Manchester Polytechnic (Balcombe, 1983). In the USA, the research which has been undertaken using selectively regional samples included, studies in South Carolina (Chovil *et al.*, 1984), Texas (Levinsohn, 1984), and one in a midwestern state (Conrad *et al.*, 1985). There have also been a number of specific group studies. For example, one-nurse units (MaKechnie, 1983), master's-prepared OH nursing specialists (McGovern *et al.*, 1985; Christensen *et al.*, 1985), all nurses and their managers in a Fortune 500 manufacturing company (Bey, 1988), the executives of the Forbes 500 corporations (Lusk *et al.*, 1988), and all the members of the AAOHN's Corporate/Executive Special Practice Group (Scalzi *et al.*, 1991). In order to interpret the descriptive findings, the first step, was therefore to determine whether the sample selection technique was in accordance with the basic assumptions of the study design. When this was not satisfied the study population was likely to be limited, resulting in some doubt about the validity of the findings in terms of the ability to generalise the results to the whole population.

Inadequate sample size and poor response rates

Any sample that included substantially fewer persons than the number asked to participate was open to questions of bias. Response rates varied from 32.3 % (Levinsohn, 1984) to 90% (Sharp *et al.*, 1989). Poor response rates were attributed to the inconvenience of the interview, the type of questions asked, and the perceived seriousness of the problem presented, etc. The number of studies with poor response rates leads one to doubt the validity of some of the findings and therefore ones ability to generalise from them. This is particularly relevant if the outcome

measures (i.e. aspects of OH nursing practice in these cases) would have been appreciably different if the non-respondents responses had been included. Documenting as much information as possible about non-respondents helped to indicate the likelihood of bias created by their exclusion.

Various characterisation of occupational health nursing practice

Because of time and financial constraints, most of the studies used a postal questionnaire of either open or closed ended structure to determine OH nursing practice by OH nurses themselves. The definitions that they employed could pose problems regarding ambiguity in the interpretation of practice. The terms "roles", "functions", "activities", "duties" and "responsibilities" were used and/or grouped to represent specific aspects of OH nursing practice. None of the investigators gave any clear definition of what was meant by the concept of the "role" of the OH nurse, nor made it distinct from either "functions" or "activities" carried out by the OH nurse (Silverstone, 1982a, 1982c; Levinsohn, 1984; McGovern *et al.*, 1985; Christensen *et al.*, 1985; Alston, 1990).

Some studies, which mentioned "functions" and "activities" of the OH nurse, provided exhaustive lists, composed of various descriptive categories, which allowed responses through open-ended questionnaires which then resulted in a list of activities which respondents either believed they should perform or believed they did already perform. Alternatively, some researchers restricted the choice and provided a predetermined list of activities to which respondents were required to agree or disagree. Whichever method was chosen, the outcome was often an unwieldy collection of descriptive information, where specific meaning was left very much to individual interpretation once the study had been published. For example, Silverstone's study (1982) listed 43 tasks, grouped into 11 functions; while McKechnie's (1983) had 10 functions; in Christensen's study (1985) 20 functions or roles were identified, whereas Balcombe (1983) listed 6 functions. Bey (1988) and Lusk (1988) also specified 20 functions and activities; however only 10 activities were named in Sharp's study (1989). Finally, 51 activities were highlighted in Scalzi's study (1991) as against only 7 categories of activities in Yoo's (1993) study.

Furthermore the quantitative measure of "time spent" utilised in some studies (Levinsohn, 1984, Sharp *et al.*, 1989; Scalzi *et al.*, 1991) was not equivalent to the qualitative measures such as the "rates of nurse involvement" (Silverstone, 1982a, 1982c), "policy and operational level involvement" (Christensen, 1985), and the "evaluation of nursing activities" (Yoo, 1993). Another related weakness was also identified, in that there was no evidence of validity and reliability for these measures. This pointed to the need for well-defined terms that have already demonstrated validity and reliability for this type of study population.

Inadequate attention to potentially confounding factors

It is probable that information about the OH nurses' personal characteristics, such as sex, age and motivation would have been of value in these studies and may have influenced the practice which the OH nurses studied provided. Although the characteristics of nurses as respondents were recorded in some of the studies, these characteristics were not specifically controlled for, with respect to the nature of OH nursing practice. For example, it cannot be concluded that there was a difference in job satisfaction between OH and hospital nurses when there was a lack of control across age, years of experience and educational attainment in a comparative study (Conrad *et al.*, 1985).

Insufficient hypothesis testing

Finally, hypothesis testing involves conducting a test of statistical significance and quantifying the degree to which sampling variability may account for the results observed in a particular study. Descriptive analysis was often insufficient with respect to the questions asked in some correlational and comparative studies. Percentages for example, were used to answer comparative questions in Lim's study (1983). Moreover adjustment between various independent variables and controlled confounding variables was not achieved using univariate analysis only, e.g. Conrad's study (1985). These may have limited or over-generalised the interpretation of the studies described above.

2.4 An overview of occupational health nursing practice

2.4.1 Introduction

A variety of research-based studies on OH nursing practice have been published and deal with a number of different issues related to this speciality of nursing. Since some common weaknesses existed in the study designs, as previously mentioned, the trends and specific characteristics of the research will be described in the following section rather than attempting to make any scientific comparisons. These studies were considered under the following headings: practice for direct care, prevention, protection, promotion and other OH nursing practice.

2.4.2 Practice for direct care

Almost all the studies of OH nursing practice have dealt with various aspects of the treatment of illnesses and injuries at work. In many countries it is still the most commonly performed aspect of OH nursing practice (Rossi, 1987). Rehabilitation (Thompson, 1982) is also an important aspect of direct care and is required at work for employees returning to work after illness and injury.

According to research conducted by EMAS (HSC, 1976) about 11.5% of the workplace where employees had OH services these did not provide any other service than treatment of emergencies and minor illnesses and injuries, and this was the most common activity. Even in the research published in the last decade the central role of caring for the sick can be seen in the work of the OH nurse. Silverstone's (1982) study indicated that the four tasks in which the majority of OH nurses were most actively involved were care of the injured (87%), listening (85%) and care of the sick (84%), followed by giving advice on medical, work or hygiene issues (77%). Balcombe (1983) obtained similar results indicating that treatment and follow-up made up the major activity in the practice of the OHNC qualified nurses, accounting for 18% of their working hours. In another study which compared the changes in OH nursing practice between 1981 and 1987, Sharp *et al.* (1989) found an increase in the proportion of nurses carrying out treatment from 88% to 95%. In ranking the amount of time spent on specific activities Sharp et al (1989) found that treatment took up the most time among 10 activities performed by OH nurses and this did not change between 1981 and 1987.

In an American national survey (Cox, 1985) 87% of the nurses followed protocols for treatment and dispensing medications. "Self-limiting" conditions such as a cold or influenza were those most often presented, followed by chronic health problems, acute emergencies and psychological and sociological problems. In McKechnie's study (1983) of one-nurse units the core functions undertaken by a proportion of the nurses were identified. Of the nurses studied 79.5% were involved in the care of occupational injuries or illnesses, and 76.2% provided care for non-occupational conditions. In Levinsohns' OH nurses' study (1984) over half of the nurses worked for large companies (from 1,000 to 5,000 employees) in Texas. More than 90% of the nurses carried out activities which included: recording keeping, treating occupational illness and injury, follow-up care, administering medications and counselling employees about non-work related illness. Finally, in a Forbes 500 corporation's survey Lusk *et al* (1988) also showed the most frequent activity performed by OH nurses was to supervise the provision of nursing care for job-related emergencies and minor illness episodes.

The OH nurse is generally the OH practitioner met most frequently by employees who receive OH services and is often the closest to them also. Many work-related conditions and diseases have similar symptoms to general disorders and in OH practice such conditions may be recognised early by the OH nurse making it possible for the employee to receive prompt and appropriate medical care. Thus the treatment of sick and injured employees will probably continue to the part of the work of the OH nurse in the future. The provision of direct care in OH services may be a valuable means of identifying the need for workplace improvements and of boosting employees morale.

2.4.3 Practice for prevention

Health surveillance is one of the most important preventive activities concerning individual health and safety at work. There are a number of categories including pre-placement health examinations, specific examinations for hazardous works, periodic examinations, return-to-work examinations and health screening. There is much variation within and between countries as to the extent to which an OH nurse can independently undertake health examinations. In the UK and all Scandinavian countries OH nurses undertake some part of the health examination and refer clients to the physicians for further examination if necessary, but this work is done by occupational physicians in France (Rossi, 1987).

The next most frequent activity found in the literature was pre-employment or pre-placement medical examinations or screening procedures constituting about 75% of the firms which employ doctors and/or nurses in the study conducted by the EMAS (HSC, 1976). Regarding the work of the OH nurse, Silverstone's (1982) study indicated that 72% of the OH nurses were most actively involved in preparation for medical examinations and 59% did pre-/post-employment interviewing and periodic screening. Balcombe (1983) also showed similar results and that the OHNC qualified nurses spent 16% of their working hours on the second major activity, that is, health supervision, such as health interviews and medical screening. In another study which compared the change in OH nursing practice between 1981 and 1987, Sharp *et al.* (1989) found an increase in the proportion of nurses carrying out medical examinations and screening duties, from 78% to 97%, and the amount of time spent (when ranked) took the second position of 10 activities, which was a change from the third position in 1981.

As in the UK, Cox (1985) demonstrated in the USA that 56% of the nurses felt responsible for medical surveillance, as recognised by the OSHA, and this was the second most frequent nursing activity in this national survey. In the one-nurse units study (McKechnie, 1983) 76.1% of the nurses were involved in health examinations in terms of the core functions undertaken by a proportion of the nurses. In Levinsohn's study (1984) over half of the nurses worked for large companies (from 1,000 to 5,000 employees). Inter-disciplinary competition from other medical personnel may partially contribute to this situation.

In general the health surveillance done either independently or with assistance from the OH nurse depends not only on the type of education received by the nurse, but also on legislation and policy (national and local) and on the extent of medical support.

2.4.4 Practice for protection

Regular visits to the workplace are necessary to identify potential hazards in the working environment and working procedures which may affect workers' health. Thus environmental surveillance is the basis for the planning and execution of other activities of OH services such as health examinations and health education.

The number of nurses and / or the amount of time spent on workplace visits were measured in some OH nursing studies. Out of the 289 OH nurses who were surveyed in Silverstone's (1982) study, 49% undertook workplace visits and observations, 28% gave advise on protective clothing and apparatus, and 27% undertook environmental surveys. Balcombe (1985) found that OHNC qualified nurses used 16% of their working hours for environmental issues, including: shop floor visits (6%); environmental surveys (1%); consultation and discussion with unions, management and team members (6%); and reporting and meeting (3%). In their more recent study Sharp *et al.* (1989) found a 36% increase in the proportion of nurses carrying out environmental surveillance duties from 59% in 1981 to 95% in 1987, and the amount of time spent when ranked, took the fifth position of 10 activities.

In the USA, in the AAOHN's national survey, Cox (1985) found that 22% of the working time of an OH nurse was spent on environmental assessment or monitoring. Rossi's international survey (1987) which covered 23 countries showed that in almost every country OH nurses visited work areas for emergencies and first-aid. In 15 of the countries surveyed OH nurses took part in environmental surveys.

Basic knowledge about work conditions and work procedures is of great importance to workers' health and helps practitioners determine the nature and extent of health examinations and health education required. In addition, the control of biological hazards, such as HIV and hepatitis B virus infection, is also of great importance especially for health care workers. Such work is demanding and complex and therefore requires the co-operation and collaboration of a multidisciplinary team.

2.4.5 Practice for promotion

In almost every country health education is apparently one of the main methods utilised for "preventive health care" (Rossi, 1987). Health education is provided whenever necessary at the individual level when there is direct contact with the employee (e.g. at times of health exammation and counselling) and at the group level in health and safety training (e g. first-aid training) or in specific health promotion programmes (e.g. smoking cessation and fitness programmes).

In Silverstone's (1982) study 85% of OH nurses were very involved in counselling individuals including listening (85%), giving advice (77%), giving information or explanation (69%), supporting action or referral (66%), and therapeutic help (46%). The OHNC qualified nurses in Balcombe's (1983) study were found to use 7% of their working hours for counselling or health advice, and 5% for teaching (e.g. first-aid training and health and safety group education). Sharp *et al.* (1989) found that between 1981 and 1987 there had been a 44% increase in the proportion of nurses carrying out general health education (from 24% to 68%) a 29% increase for counselling (from 66% to 95%) and a 41% increase for first-aid training (from 14% to 55%).

When the use of OH nurses' time spent on health education was studied in the USA, it was found that 12% of their working hours consisted of developing and conducting health education programmes (Cox, 1985). In the past decade extensive health promotion programmes have been carried out. According to same study (Cox, 1985), 326 companies (67%) from which nurses responded offered a drug, alcohol or smoking programme, mainly on an individual basis. 61% offered a programme of screening individuals for heart disease or stress, 56% a diet or nutrition programme, 49% screening programmes for cancer, health education, and individual programmes, and 41% provided individual and group physical fitness programmes. Similarly, nearly 66% of worksites with more than 50 employees had at least one health promotion programmes (Christenson and Kiefhaber, 1988). Patterson (1987) stated that the OH nurse is frequently the person responsible for designing and conducting these programmes.

Health education is a basic skill required in OH services and should be part of a corporate programme of health promotion which requires the co-operation and collaboration of a multidisciplinary team, and consultation with the work force.

2.4.6 Other occupational health nursing practice

Many other aspects of OH nursing practice have been mentioned in the literature for example, administration (Silverstone, 1982a; McKechnie, 1983; Cox, 1985; Sharp *et al.*, 1988), record keeping (Levinsohn, 1984), management (Christensen, 1985; Scalzi *et al.*, 1991; Yoo, 1993), policy-making (Christensen, 1985), liaison (Christensen, 1985), co-operation with other professionals (McKechnie, 1983), external relations (Lim, 1983; Sharp *et al.*, 1988), epidemiology (Sharp *et al.*, 1988), research (Lim, 1983), etc. These can be grouped into administration, management and research which help and improve OH nursing practice.

It can be concluded that a larger proportion of OH nurses spend the greater part of their time on traditional curative care rather than preventive and promotive practice, and that they adopt a

reactive rather than proactive approach to their work. However, OH nursing practice is increasingly expanding and focusing on the prevention of ill-health and disability and on control of the work environment. To be successful, OH nurses now need to co operate closely with other professional personnel as well as with managers.

2.5 Demarcation between internal and external influencing factors

Before discussing any potential factor influencing OH nursing practice the first step is to clarify the conceptual demarcation between internal and external influences. From the previous review a number of factors have been identified which appear to influence OH nursing practice. These can be divided into two main groups: internal (i.e. within organisations) and external factors (i.e. outside organisations). Internal factors that more directly influence OH nursing at the organisational level or within the organisation include OH nurses' own perceptions and beliefs (e.g. ideal or important roles considered), OH nurses' professional background (e.g. professional qualifications and experience), the working environment (e.g. the type and size of the organisation), the nature and size of the OH and safety team (e.g. staff in the OH and safety department and their professional relationships), and personal factors (e.g. sex, age, status and motivation). External factors influence OH nursing practice more indirectly. These include: legislation and policy (national or regional), socio-economic circumstances and changes, they type of national or local health care system available, and public awareness of health and environmental issues, for example.

2.6 Internal factors influencing occupational health nursing practice

2.6.1 Introduction

This section is concerned with the identification of potential internal factors that have been shown from the literature to influence OH nursing, or are thought to influence OH nursing. Together with some of the UK studies already mentioned in the previous section discussing OH nursing practice, a number of studies from America and Europe will also be referred to in this section which have focused on the potential internal factors thought to influence OH nursing. These studies are considered under the following headings: OH nurses' professional background, OH nurses' perceptions and beliefs, the working environment, the OH and safety team, and other potential internal factors.

2.6.2 Occupational health nurses' professional background

The nurses' professional background including education and experience, should determine what they consider as the main tasks in their work. If they have neither received any education about preventive and promotive health care nor about OH, or experience in these areas they will use the hospital or medical model in their new job and provide care only for the sick and injured. In general, the basic principles of nursing are similar in all fields of nursing whether in hospitals, the community or the workplace. However additional knowledge is needed by OH nurses for their practice in industry, commerce and the service sector. OH nurses need to understand the changes occurring in work, workplaces and in working life, and even in the general living environment. In addition, they need to be able to recognise, control and prevent the health risks caused by these changes.

The EMAS (HSC, 1976) survey conducted in 1975 reviewed OH services. A minority of services were the sole responsibility of a single nurse, more than 25% of which were State Enrolled Nurses (SENs). Of the full time Registered Nurses 19.6% held the OHNC, whereas only 16.7% of part-time Registered Nurses held the OHNC. In another study by Silverstone (1982) it was found that the majority of OH nurses (81%) were Registered General Nurses and 19% were SEN's. Among them 23% possessed Part I of the OHNC and 26% also possessed Part II of the OHNC. Kazem (1987) found 44% of the nurses working in NHS OH services had the OHNC qualification. In Dorward's (1988) study 51.1% of the nurses were Registered Nurses with the OHNC qualification, 12.6% had the Occupational Health Practice Nurse (OHPN) qualification, 21.5% held only the Registered Nurse qualification, 9.6% were SEN's with the Occupational Health Practice Nurse (OHPN) qualification, and 5.2% held only the SEN qualification. But Sharp's (1988) study showed 55% of the nurses working in South West England did not hold any qualification in OH nursing, due to their being only one OHNC course available in that region at that time. Recently the study by Yoo (1993) used the RCN-SOHN membership list and found 95.4% held the OHNC and 59.7% had experience in hospitals.

In the USA, in the AAOHN's national survey Cox (1985) found that 20% of Registered Nurses held a baccalaureate degree and 6% had a masters degree. The OH nurses' study in Texas (Levinsohn, 1984) also showed 26% held a bachelor's degree, 82.2% held the AAOHN membership, and 79.6% held local membership. An interesting study concerning master's-prepared OH nurses (Christensen *et al.*, 1985) revealed that their policy level involvement was related to the number of credits obtained on management and administration courses, and operational level involvement was related to the number of credits obtained in physical assessment skills courses. This study showed the effect of educational courses on OH nursing practice in their later careers.

In her international survey (Rossi, 1987) showed that in almost all countries the basic nursing education did not include courses about OH care and that although continuing eduction has been arranged for OH nurses, in some countries it is not usually mandatory. Although few studies focused on the influence on OH services of basic and continuing education or experience in other nursing specialities, it could be believed that there must be some influence on OH nursing practice from OH nurses' professional background in other areas.

2.6.3 Occupational health nurses' perceptions and beliefs

OH nurses' perceptions and beliefs about OH nursing are associated with their knowledge and experience. Some studies (Silverstone, 1982a; Sharp *et al.*, 1989; Yoo, 1993; Scalzi *et al.*, 1991) evaluated OH nursing practice as perceived or believed to be appropriate by OH nurses, which then examined the similarities and differences compared with the actual or real situation.

Silverstone's (1982) study used the degree of "importance considered" versus "nurse involvement" in 43 tasks, grouped into 11 functions, representing OH nurses' perceptions and beliefs about their roles. It was concluded that the functions which were considered important were also those in which the nurses were most commonly involved. In Sharp's (1989) study the "task considered to be most important" versus the "task taking most time" was utilised to gauge OH nurses' perceptions and beliefs about their practice. Medical examinations or screening, treatment and environmental surveillance were considered to be the most important duties but most time was spent on the duties of treatment, medical examinations or screening and administration. Similarly, in a recent study (Yoo, 1993) nurses' "expectations" versus "evaluation" of the OH nursing service was employed as the means of establishing OH nurses' perceptions and beliefs. The correlation for expectations and evaluations of non-traditional nursing services was significantly lower than for traditional services.

However, a manager-level OH nurses' survey (Scalzi *et al.*, 1991) in the USA attempted to identify how important activities were perceived to be (vs. the time spent on them). There was a high association between scores for importance and the time spent on them. It seemed that corporate nursing managers allocated time spent on activities appropriately with regard to the importance.

It can be seen that there is a trend of incongruence between OH nurses' perceptions and beliefs and their real practice except among nursing managers, whose work involves policy making in this field. They thought that their practice should be more preventive than curative. Thus it can be inferred that there is some influence from OH nurses' perceptions and beliefs on OH nursing practice.

2.6.4 Working environment

The working environment consists of work, workplace, and working life and is always considered one of the most important factors directly influencing the OH service. This includes the type of organisation and the number of employees. It must be recognised that other factors in the working environment include organisational policies and strategies and the organisational culture. These are also important and these may affect individual and organisational health.

Type of organisation and number of employees

In the EMAS (HSC, 1976) survey it was found that the size of firm was a predominant factor, where small firms (employing up to 250 workers) did not provide any service, other than perhaps a doctor on call. In contrast, larger firms (employing over 1,000 workers) often employed doctors and nurses. Similarly, Sharp's (1989) study showed that since 1981 the number of OH nurses who worked for one organisation only, rather than for multiple employers, increased, but the number of those who worked for small enterprises (fewer than 250 employees) or for large enterprises (more than 5,000 employees) decreased, due to the economic change. However the type of organisation did not appear to be a very important factor in influencing the existence of OH services, except in the NHS. Since 1970s the provision of OH services which are mostly nurse-based has expanded in the NHS. (Kazem, 1987)

In the USA, Chovil *et al.* (1984) also found that as the size of the plant in South Carolina increased so did the number of Registered Nurses employed (i.e. only 3% of small plants employed Registered Nurses whereas 89% of large plants employed Registered Nurses). A national survey showed that over half of OH nurses worked for large companies with more than 1,000 employees (Cox, 1985).

There are few studies concerning the influence of the type of organisation and the number of employees on OH nursing practice. In the one-nurse units study by McKechnie (1983), no significant relationship was found between the number of functions performed and any of the four factors studied, that is the size of organisation, the type of business, the length of OH experience, and the level of medical supervision. Unfortunately, due to inevitable selection bias it was difficult to examine the above factors satisfactorily in a study of one-nurse units which volunteered for this study. However, there were some differences among OH nursing activities in the Forbes 500 corporations, according to the size and type of industry represented by the corporations (Lusk *et al.*, 1988). For example, in heavy industry corporations OH nurses were more frequently identified as serving as a member of the OH and safety committee and were conducting plant surveys regularly to identify hazards and potential violations of legislation. Corporations with fewer than

10,000 employees were less likely to have their OH nurses involved in the more sophisticated activities of evaluating the ability of absentees to return to work, and were less likely to have them serve as members of the OH and safety committee.

Managers and employees

Approximately half of the master's-prepared OH nurses studied by Christensen *et al.* (1985) started their new positions without formal job descriptions. Even when there is a clear job description as a result of the organisational policy and strategy it is not always used in practice. Thus some researchers utilised managers' or employers' perceptions and beliefs about the OH nursing practice in their studies as a surrogate for organisational policies about OH nursing (Bey *et al.*, 1988; Lusk *et al.*, 1988; Dorward, 1990; Yoo, 1993). Some (Dorward, 1991; Yoo, 1993; Bey *et al.*, 1988) of them examined the similarities and differences between managers' and OH nurses' perceptions and beliefs about current or ideal roles. Only Yoo (1993) considered employees' health care demands in her study, and she used them as an input to her self-care model.

A study (Bey *et al.*, 1988) in the USA found that in a Fortune 500 manufacturing company there were very similar perceptions of the nursing functions perceived by nurses and managers. Lusk *et al.* (1988) found that executives of major corporations were interested in having nurses extend their role and engage in more advanced activities such as conducting research, analysing trends, and developing special health programs.

Dorward (1991) set out to compare the perceptions held by OH nurses and their managers concerning OH nursing functions. All 13 functions except treatment were perceived as more important by the OH nurses than by their managers, especially health promotion and liaison. Similarly, Yoo (1993) examined OH nurses', employers' and employees' expectations of OH nursing services (i.e. ideals) and their evaluations (i.e. actual evaluations) of these services. Employers had significantly lower expectations than nurses, except in the area of care and treatment. However, employees had high expectations of preventive services but their lower evaluations indicated that these were not met.

It can be seen that the type of organisation and the number of employees can, to some extent, influence the quantity and quality of the OH nursing practice. Although there are no studies concerning the influence of organisational policy and strategies on OH nursing practice, some of the tasks perceived by OH nurses as appropriate were incongruent with those considered necessary by their managers. This needs more research to identify influencing factors rather than research involving comparisons alone.

2.6.5 Occupational health and safety team

The rapid changes now occurring in work, workplaces and working life require versatility, expertise and good co-operation between the different professional groups if OH and safety services in workplaces are to be developed satisfactorily. The ILO recommends that OH services should be multidisciplinary, represented by occupational medicine, industrial hygiene, ergonomics and OH nursing (ILO, 1985).

In Silverstone's (1982a, 1982b, 1982c) study 39% of the OH nurses worked alone without professional support from colleagues or from a physician, and 13% did not have a physician at all. Bamford's (1987) study reported 28.2% of the OH nurses had full-time support from doctors, 69.0% had part-time support, and 2.8% had no support. It also showed that 20% worked alone, 21% with first-aiders, 29% with other nurses, and 14% with other specialists. The regional survey by Sharp *et al.*, (1988) in South West England showed that 66% of the OH nurses worked with other nurses compared with 56% in 1981 and 90% worked with a medical officer.

In Cox's (1985) survey she showed that more than 50% of OH nurses did not have the support of a on-site physician. More than two thirds of the estimated 23,000 OH nurses in the USA are employed in one-nurse units (Lloyd, 1984). McKechnie (1983) found that the level of medical supervision did not affect the number of functions performed in one-nurse units. Chovil's study (1984) in South Carolina noted that most companies had some relationship with a physician, however, the majority of these physicians did not visit the plants. Among the plants employing nurses 10% did not indicate that they had any relationship with a physician. Levinsohn's study (1984) in Texas showed that 51% of the OH nurses worked with less than three other health care providers. Among them 41% did not work with a physician. In contrast, Lusk's survey of major corporations (Lusk *et al.*, 1988) showed 90.2% of corporations with health departments had at least one Registered Nurse. The percentage of corporations which employed other types of health and safety provider are as follows: safety engineers (61%), physicians (61%), industrial hygienists (45%), counsellors (34%), Licensed Practice Nurses (LPN's) (16%), toxicologists (16%), emergency medical technicians (15%), and physician assistants (13%), epidemiologists (10%), laboratory and X-ray technicians (9%), safety coordinators (4%), and safety administrators (3%).

There are few studies describing the relationships between OH nurses and the other professionals in OH and safety and how OH nurses play their role within the OH and safety team (Simons,1980; Silverstone,1982). Alston (1990) indicated that role overlap occurred where a team approach such as environmental activities was required and communication problems were highlighted as a

difficult area. However, it was found that cooperative efforts were more in evidence than conflict situations.

The most common professional combination in OH services is a physician and an OH nurse. In some countries a physician is not included in the OH team in the workplace. In most countries it will be a long time before it is possible to form these OH and safety teams (Rossi, 1987). Cooperation is not only needed within a organisation, it is also important to communicate outside especially for those nurses in one-nurse services.

2.6.6 Other potential internal factors

Some other potential internal factors influencing OH nursing practice have been identified in some studies such as demographic information (sex, age and marital status), details of current post, motivation (Levinsohn, 1984, Bey *et al.*, 1988), and job satisfaction (Levinsohn, 1984; Conrad *et al.*, 1985). However, few studies investigated or controlled those influences which could separate the real effect from other factors of interest.

2.7 External influencing factors for occupational health nursing practice

2.7.1 Introduction

This section is concerned with the identification of potential external factors that have been shown to influence OH nursing, or are potential influences on OH nursing practice. It is difficult to measure external factors since long time interval are required and ideally comparisons should be made between different countries. International comparative studies are difficult because of the different measures, measurement instruments and techniques employed. Thus, a number of factors have been considered (Radford, 1990; Rantanen and Lehtinen, 1991) but there were few studies that involved the external factors influencing OH nursing practice at the national level, or its equivalent. Some studies were considered under the following headings: national health system, economic climate, national development, and other potential external factors.

2.7.2 National health system

In the past OH services appear to have developed outside national health systems in many countries. The relationship between OH services and national health systems is thus a crucial factor if one is to consider universal coverage of workers and the provision of comprehensive services. Naturally this situation has some influence on current OH nursing practice. A few British studies have focused on the relationship between the NHS and OH service

Some studies highlight the fact that there have been many working people without direct access to OH nurses or any form of OH service. It appears that small firms or workplaces, and especially those near to NHS facilities are least likely to provide a comprehensive OH service to employees (HSC, 1976). Other studies by McEwen *et al.* (1982) and Gaffney (1986) have emphasised the lack or absence of two-way communication between the NHS and OH services, which implies a need for better liaison, on both sides, especially by NHS personnel - many of whom still appear to have little or limited knowledge of the roles and work of OH personnel and services in general and of OH nurses in particular. It was suggested that improved communications would reduce misunderstandings, improve patient care and thus lead to greater staff satisfaction. Therefore, it appears that when a national health system operates in countries where OH services exists, this influences the establishment and practice of those OH services. In the UK this is the NHS and it is relevant to consider the resources available for referral systems to enable OH services to operate optimally.

2.7.3 Economic climate

A interesting study concerning temporal changes by Sharp *et al.* (1989) aimed to compare how OH nurses perceived their roles in 1981 and again in 1989. It also assessed the effect of changes in industry and economy on OH nursing in the England. The traditional industries employed fewer OH nurses than previously but the NHS appeared to be the leading employer of OH nurses in the South West region of England. In the period studied there were expansions of the nurses' roles from traditional health care, to include the prevention of diseases and the control of working environment. This partly reflected competitive changes from traditional to modern industry. Although these were not made clear in the report, the findings potentially reflected the changes in types of industry directly and the changes of economic situation and the impact on the NHS, indirectly. In general economic changes influenced OH nursing practice indirectly and were inferred from the qualitative temporal trends study rather than from quantitative results.

2.7.4 National development

National development implies developments in politics, sociology, economics, education and health and many other areas. An interesting study which compared OH nursing services in the UK with those in Malaysia (Lim, 1983) concluded that the main activities were the same for each group studied. Although the findings illustrated some differences in OH nursing services it did provide an overall impression of OH services in each country, but the weakness of the selection bias limits its value. Also this study did not address external factors in detail, such as political, social and cultural differences; except in terms of Malaysia being a developing country. Basically national development was considered as an external factor which broadly influences OH nursing

practice. However the need for quantitative measures in international comparative studies, in term of indicators about politics, sociology, economics, education and health, is apparent.

2.7.5 Other potential external factors

There have been two international comparative studies (Rossi, 1987, 1991) which gave useful exploratory hypotheses for the external factors influencing OH nursing practice. It was suggested that the following aspects seemed to play an important part in the extent to which OH nurses' work and maintain independence in different countries: the level of education, national legislation on OH and safety issues, general state of health and social services in the country, connections with primary health care, stage of development of the country, quantity and education of other staff in OH care. (Rossi, 1987). This has facilitated the quantitative study of external factors in this research.

2.8 Conclusions

Whilst there is no shortage of literature on OH nursing and related topics in Britain and internationally in the English speaking world, the main research contributions are inadequate in various ways. Descriptive studies, for example, often provide a wealth of information on the practice and education of OH nursing, but do not help explain in an analytical way how these influence what is done. Equally, studies which are analytical in focus tend to be partial rather than comprehensive, typically using specific groups or areas only. Thus, they may examine a single issue, a single population attribute, a single level organisation, or a single area, rather than considering OH nursing practice as a whole. This is not to say that descriptive studies and specific concern studies have no value. On the contrary, descriptive data contains much useful information on which to build an analytical study, while specific concern studies frequently include valuable insights into certain aspects of OH nursing.

There is a need to go beyond these approaches and to analyze the overall pattern of OH nursing practice. This research attempts to provide an empirical approach to the factors influencing OH nursing practice. The aim has been to discover what kinds of OH nursing practice exist and how OH nursing practice is perceived in UK, Europe and the USA. The identification of the main factors that currently influence OH nursing practice has been used to inform the construction of a framework. The production of a framework was regarded as beneficial for OH nursing practice since through use of it, the OH nurse could provide more appropriate nursing services and better care.

Chapter 3. Materials and Methods

3.1 Introduction

This study aims to meet the following four objectives: to undertake a semi-structured questionnaire survey of key persons in OH nursing in the UK in order to gain an informed overview of current practice; to undertake a structured postal questionnaire survey of OH nurses in order to identify the factors influencing their practice; to use the data from the key persons' and OH nurses' surveys to inform a framework or model for OH nursing practice, and; to make recommendations about curriculum development for OH nursing. In summary, the study provides a detailed description of key persons' and OH nurses' perceptions and beliefs of their professional roles and an analysis of the main factors influencing OH nursing practice.

3.1.1 Objectives of the study

The objectives of the study focus on three aspects to achieve research goals: comparing ideal roles/functions and actual roles/functions, establishing the main factors influencing OH nursing practice and constructing a framework which informs and benefits the education and practice of OH nurses. Thus the objectives are:-

1) To gain an overview of OH nursing practice in the UK.
2) To identify the main factors currently influencing OH nursing practice.
3) To construct a new practice based framework for OH nursing practice.

3.1.2 Statement of research questions

1) How do OH nurses' perceive their roles?
2) How do OH nurses' perceive their functions?
3) What kind of roles do OH nurses' adopt in their practice?
4) What kind of functions do OH nurses' fulfil in their practice?
5) Are there any differences between their perceptions and their real work?
6) What are the influencing factors which affect their practice?

3.2 Study design

3.2.1 Selection of method

The relative merits of a survey design or a more quantitative approach were considered. A survey brings benefits which were recognised by the investigator. Quantitative results can be used to supplement qualitative data. The use of a survey can generate a large volume of information. This is more amenable to quantitative statistical analysis than is descriptive data. Moreover, survey research may contribute to greater confidence in the generalisation of results (Jick, 1979) and is more suitable for extensive analysis.

In order to consider how to obtain both qualitative and quantitative data, a range of data methods have been used. In this study interviews and work observations were undertaken by the investigator in order to gather valuable qualitative data, and then the questionnaire survey was undertaken to obtain a large amount of quantitative data. Open-ended questions in the questionnaire also yielded some qualitative data. A questionnaire is the easiest way of ensuring structured data, it is thus the most common technique used in survey research. The survey therefore formed the focus of data collection in this study.

A cross-sectional survey was designed and carried out among active OH nurses from local OH nursing groups. A mixed questionnaire containing both closed and open-ended questions was designed in order to achieve collection of quantitative and qualitative data simultaneously and to compensate for the potential drawback of using a survey alone.

3.2.2 Research strategy

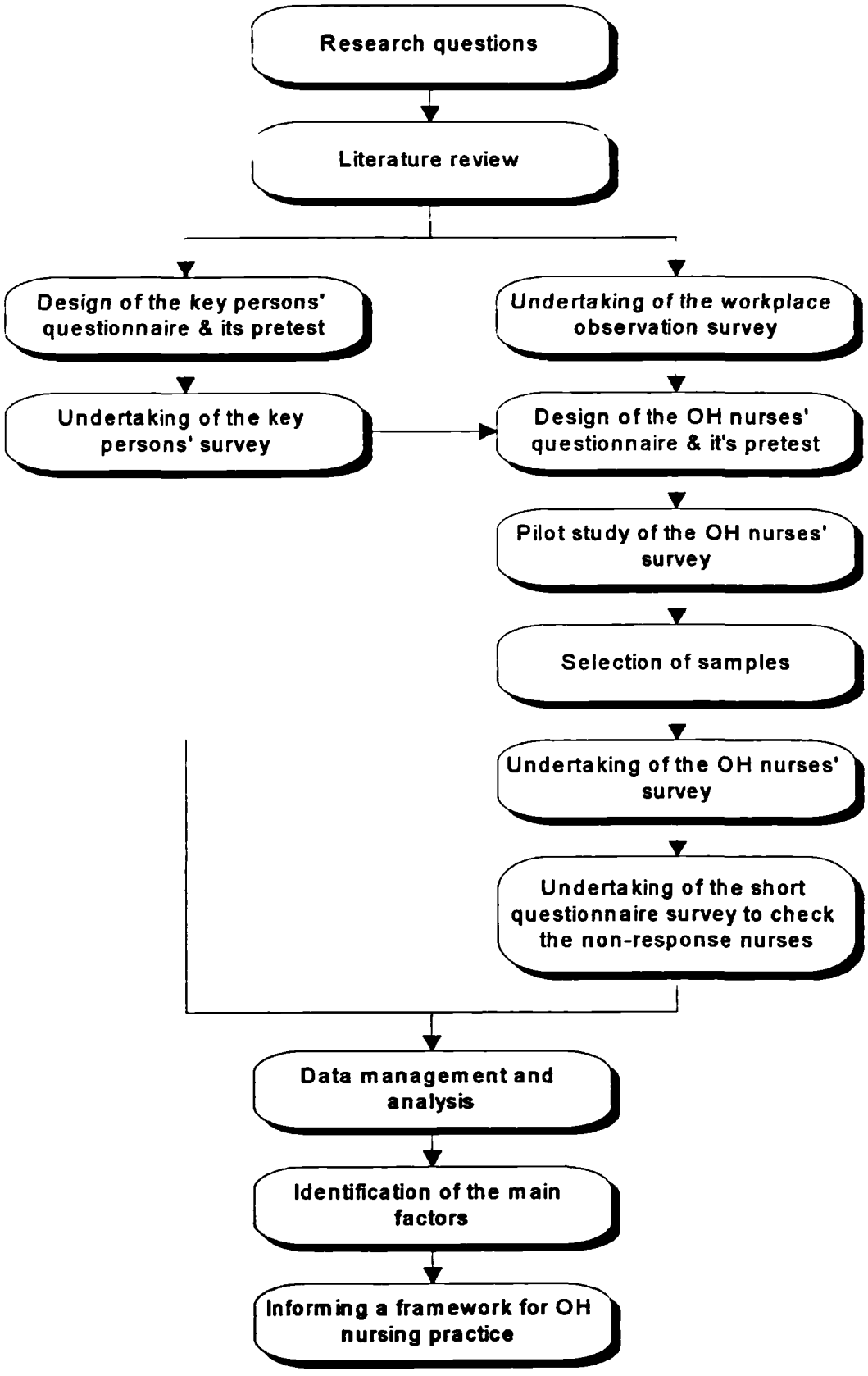
The research strategy involved a survey of OH nurses using data collection methods including interviews, on-site observation surveys, and questionnaires in the UK during the period 1990-1992. *Figure 3.1* illustrates the overview and main stages of the study. Data collected during the study is divided into the following three main categories:

Stage 1 - Exploratory study - workplace observation.

Stage 2 - Key persons' survey.

Stage 3 - Main study - OH nurses' survey.

Figure 3.1 The overview and main stages of the study design



Following intensive research and a literature review of the area of interest, the investigator wanted to combine the benefits of interview, questionnaire, and observation techniques to fulfil the objectives of this research. Therefore, the first two stages: the key persons' survey and the workplace observation survey preceded and influenced stage 3 which constituted the main study questionnaire.

The three stages outlined in Figure 3.1 will be discussed in more detail in the following sections of this chapter. Data from stage 2 (key persons' survey) was used together with that obtained from stage 1 (workplace observation survey) to inform the ultimate study and therefore to design the questionnaire used in stage 3 (OH nurses' survey).

3.3 Exploratory study - workplace observation survey

The purpose of the workplace observation survey was to observe OH nurses' activities in order to provide a picture of OH nursing practice in the UK.

3.3.1 Access to sample subjects

An appointment was made to see the Occupational Health Nursing Diploma (OHND) students of the RCN on 17th January 1991 to introduce the research proposal and to ask for volunteer subjects for the workplace observation survey.

3.3.2 Observation data collection

Four industrial companies working in the following fields: banking, car manufacture, electricity generation, and food manufacture, were selected in order to observe OH nurses' activities and to provide a picture of OH nursing practice. One day was spent in each working environment, observing the nurse who had volunteered.

Activities were recorded sequentially and timed for each individual nurse. There was no attempt to interfere with the normal pattern of the working day. The observation schedule can be found in Appendix B1. Other features observed included the presence or absence of a nursing policy and its components, the number and status of OH personnel, and facilities and instruments. Further information was gained about health education activities.

The main results from the observation period revealed that most time was spent on health screening and pre-employee health examination and administration (i.e. telephone communication

with employees, and record keeping). The least amount of time was spent on health education and safety. This pattern appeared to be consistant across the 4 individuals studied.

3.4 Key persons' survey

This survey was undertaken in order to gain an understanding of the views and perceptions of key persons in the OH nursing field and to identify potential influencing factors and models of good practice.

3.4.1 Access to the sample subjects

An appointment was made to see the OHND's tutor of the RCN, in order to discuss the key persons in this field in the UK and to seek permission to use the OHND student namelist. It was decided that the members of the Society of Occupational Health Nursing Executive Committee (SOHN-EC) were very influential in the UK, and a letter (Appendix C1.) was therefore sent to the members of SOHN-EC to ask whether they would agree to participate in this study. Those who were able to take part were asked to contact the author by telephone or to complete and return a reply slip.

An interview took place with the secretary of the Occupational Health Managers' Forum (OHMF) of the RCN of the UK, and as a result of this meeting, the author was supplied with a membership list of the members of this forum. A letter (Appendix C1.) was subsequently sent to the members of the OHMF to ask them if they would consider participating in this study.

A nurse consultant to the RCN-SOHN was asked for more information about key persons and from this a membership list of the Nursing Committee of the International Commission on Occupational Health (ICOH-NC) was obtained from one of the members of the ICOH-NC. A letter (Appendix C2.) was then sent to the members of the ICOH-NC to inquire if they would agree to participate in this study.

The executive director of the AAOHN on 2nd April 1991 was approached (Appendix C3.) to identify the key persons in the OH nursing field in the US and to ask for details of their names, addresses, and workplaces. Subsequently a letter (Appendix C2.) was sent to the key persons in the US to ask them if they would consider participating in this study and a further key persons namelist was sent by one of the persons who was participating in this study.

3.4.2 Sample

The ultimate list of key persons participating in the study included the following: the members of the SOHN-EC, the members of the OHMF of the RCN of the UK, the members of the ICOH-NC, and various key persons in OH nursing in other countries (*Table 3.1*).

Table 3.1 Breakdown of the key person sample by organisation and nationality.

Organisation	Number	Interview	Postal
RCN SOHN-EC[a] (UK)	7	7(4)[f]	
RCN OHMF[b] (UK)	35	15(6)	20(7)
ICOH-NC[c]			
Australia	2		2(1)
UK	2	2(1)	
USA	2		2(1)
Canada	1		1
Finland	1		1(1)
Japan	1		1
Netherlands	1		1(1)
Nigeria	1		1(1)
Sweden	1		1
AAOHN[d] (US)	17		17(7)
European expansion[e]			
Sweden	4		4(1)
UK	3	3(1)	
Denmark	1		1
Finland	1		1
Iceland	1		1(1)
Netherlands	1		1
Norway	1		1(1)
Total number	83	27(12)	56(23)

[a] RCN SOHN-EC: Royal College of Nursing: Society of Occupational Health Nursing Executive Committee.
[b] RCN OHMF: Royal College of Nursing: Occupational Health Managers' Forum.
[c] ICOH-NC: International Congress on Occupational Health Nursing Committee.
[d] AAOHN: American Association of Occupational Health Nurses.
[e] European expansion: Indicates persons who were referred to in the questionnaires by the initial subjects.
[f] Numbers in parenthesis refer to positive replies.

3.4.3 Data collection

During the period between January and March in 1991, a key persons' survey was undertaken in the UK. This initially involved face-to-face interviews with key persons, who were then asked to complete open-ended questionnaires, and return them by post to the researcher. These

questionnaires were also sent to key persons in a number of other countries. The interview data enabled the researcher to understand more fully the issues surrounding OH nurse practice and influenced the design of the questionnaire for the main study. The open-ended questionnaire survey was used in order to collect data on current perceptions of OH nursing and to identify influencing factors and models of good practice.

From *Table 3.1* it can be seen that a total of 83 postal questionnaires were sent to key persons with 38 being returned (giving a response rate of 48%). 31 valid questionnaires were divided into 3 different groups according to the country in which the key person was a resident of the UK, the US and other European countries (3 blank questionnaires and 4 questionnaires not belonging to any of the three groups, being discarded from the 38 returned questionnaires). 13 key persons filled in the additional questions for managers. As well as the 83 postal questionnaires, personal interviews were also carried out with 27 of the key person subjects in the UK. The key persons' survey questionnaire can be found in Appendix B2.

3.4.4 Data analysis

After the collection of data, qualitative data analysis was undertaken to yield information from the questionnaires. The data from each question where subject was invited to comment (i.e. open-ended) was freely typed first and, then, a coding process was employed following procedures analogous to a content analysis. In the case of results that could be quantified frequency data were employed. A summary of this latter technique is given below and details of the results are described in Chapter 4.

Firstly, the data from the questionnaire was freely typed. Secondly, for each question, key words were noted from the replies in all questionnaires. Thirdly, where necessary, the key words were put into groups of similar meaning words, with each group having its own code number. Fourthly, each question of every questionnaire was analyzed and one or more code numbers assigned to it. Finally, the total number of references to each code number was found and as a result of this, the qualitative data could be seen to yield quantitative results.

3.5 Main study - occupational health nurses' survey

This survey was undertaken to collect data on the current concepts, roles and functions of OH nurses, and to identify influencing factors and models of good practice.

3.5.1 Access to sample subjects

A letter was sent to the advisor to the RCN-SOHN to ask for permission to use the namelist of the SOHN, and as a result of this, the membership list of the SOHN and the local groups' secretary namelist was obtained. A further letter was sent to 31 local groups of the SOHN to seek permission to use their namelists; fifteen local groups gave permission and sent a copy of their namelists. The OH nurses' survey included study subjects who were active OH nurses members of the local groups of RCN-SOHN in the UK.

3.5.2 Questionnaire design

A structured questionnaire was designed. The questionnaire content was developed from the literature review, workplace observation, interview, key persons survey and the experience of the researcher (*Table 3.2*). The content of the questionnaire divided into four sections:

Section A: Exploring views and ideas about OH nursing.
Section B: Addressing the main factors influencing OH nursing practice.
Section C: Questions related to professional development.
Section D: Details about the practitioner and their role.

The first eight questions referred to section A, and were designed to explore the views and ideas held by OH nurses about OH nursing. Questions 9 to 19 inclusively, examined the main factors influencing OH nursing practice (section B), while questions 20 to 35 were concerned with professional development issues (section C). Section D comprised the last 18 questions, from 36 to 49 and was concerned with OH nurse practitioners and their role. In total there was 49 questions, some closed and some open ended. Most questions contained sub-sections or various forced-choice alternatives. Therefore, the total number of answers derived from this questionnaire was greater than 49 (*Table 3.2*).

Two different validity checks were employed in the development of the questionnaire. Content validity was checked by OH nursing experts working in four different areas (education, government service, industry and hospital). They were involved in checking the content of the questionnaire, which was designed on the basis of a literature review, workplace observation, interview, key persons survey and the previous experience of the researcher. Face validity was also considered. Seven OH nurses who worked in heavy industry, food manufacture, a nuclear laboratory, a bank, a hospital, a university and a group service were asked to check the questionnaire content.

Table 3.2 Influences on questionnaire design.

Ques	Description	Code	Close	Open	Statistical	Reference (Research)	Reference (Non-research)
Q1a	Ideal role Actual role	IR 1_10 AR 1_10 Independent variables	Yes			Michaud,1984/Alston,1990 Key persons' survey	Puetz,1982 Salmon_White, 1982 Morris,1985 Kocks,1991 Guzik,1992
Q1b	Other role	RL 11 18		Yes	Des[a]		
Q2a	Ideal function Actual function	IF 1_20 AF 1_20 Independent variables	Yes			Silverston,1982/Lim,1983 Balcombe,1983/Sharp,1988 Dorward,1990/Yoo,1993 McKechnie,1983 Chovil,1984 Cox,1985 Atherton,1985 McGovern,1985 Christensen,1985/Lusk,1988 Bey,1988/Scalzi,1991 Key persons' survey	Makachine,1983 Babbitz,1983 Dees,1984 Boydstun,1985 Bey,1988 Cooney,1989 Guzik,1992
Q2b	Other function	FN 21 40		Yes	Des		
Q3	Def of OH nursing	DEFOHN	Yes	Yes	Chi[b]		
Q4	Def of OH nurse	DEFOHNS	Yes	Yes	Chi		
Q5a	OH nursing differs GN	DIFFER	Yes		%		
Q5b	Element	ELEM 1_7	Yes		Log[c]	Key persons' survey	Diane,1992 Radford,1992
Q5c	Element	ELEM8_32		Yes	Log		
Q6	Characteristics	CH 1 14	Yes	Yes	Log	Key persons' survey	
Q7	Relationship with CHN	CH15		Yes	Des		
Q8a	Unique	UN 1 9	Yes		Log	Key persons' survey	
Q8b	Unique	UN 10 37		Yes	Log		
Q9a	Model	MODEL	Yes		%		
Q9b	Reasons for model	MREASON		Yes	Des		
Q10	Model for OH nursing	MTYPE	Yes	Yes	%	Key persons' survey	
Q11	Reasons for choice model	TREASON		Yes	Des		
Q12a	OH nursing change	PCHANGE	Yes		%		
Q12b	Source of change	CG 1 7	Yes		Log	Sharp,1988,1989 Key persons' survey	
Q12c	Other change	CG 8_30		Yes	Des		

Ques	Description	Code	Close	Open	Statistical	Reference (Research)	Reference (Non-research)
Q13a	Influencing factors	FX 1 14	Yes		Log	McEwen,1982/Kazem,1987 Key persons' survey	Boydstun,1985 Millter,1989 ICN,1990 Ivey,1993
Q13b	Other influencing factors	FX 15_24		Yes	Des		
Q14	Education and preparation	BE 1 14	Yes	Yes	%	Key persons' survey	
Q15	Important of continuing education	CEDUCIMP	Yes		%		
Q16	Continuing education	CE 1_97	Yes	Yes	%	Silverstone,1982 Levinsohn,1984 McGovern,1985/Lusk,1988 Doward,1988 Key persons' survey	Parker,1982 Archer,1983
Q17a	Special training	ST 1_10	Yes		%	McGovern,1985 Key persons' survey	
Q17b	Other special training	ST 11 34		Yes	Des		
Q18a	Main issues and problems	PR 1_8	Yes		%	Key persons' survey	Radford,1987
Q18b	Other issues and problems	PR 9_33		Yes	Des		
Q19a	Future holds	FU ! 5	Yes		Chi	Key persons' survey	Haag,1992
Q19b	Other future holds	FU 6 37		Yes	Des		
Q20	Statutory qualifications	QU 1-10	Yes		Chi	Bamford,1987 Dorward,1988	
Q21a	Professional qualifications	PQUALI	Yes		%	Bamford,1987	
Q21b	Professional qualifications	PQ 1 10	Yes	Yes	Chi	Key persons' survey	
Q22a	Short professional course	SCOURSE	Yes		%	Dorward,1988	
Q22b	Short courses	SD 1 123		Yes	Des		
Q23a	Present courses	PCOURSE	Yes		%	Dorward,1988 Key persons' survey	
Q23b	Present course name	PCNAME		Yes	Des	Dorward,1988 Key persons' survey	
Q23c	Attendance pattern	PCTIME	Yes	Yes	%	Dorward,1988 Key persons' survey	
Q24a	Future professional qualifications	FQUALI	Yes		%	Dorward,1988 Key persons' survey	

Ques	Description	Code	Close	Open	Statistical	Reference (Research)	Reference (Non-research)
Q24b	Future qualification course name	FQNAME 1_3		Yes	Des	Dorward,1988	
Q25a	Hospital experience	HSPEXP	Yes		%	Dorward,1988	
Q25b	Department of hospital	HD 1_21	Yes		Log	Dorward,1988	
Q25c	Other department of hospital	HD 22_51		Yes	Des		
Q26a	Community experience	CHNEXP	Yes		%		
Q26b	Practice in the community	CN 1_7	Yes		%	Dorward,1988 Key persons' survey	
Q26c	Other practice in the community	CN 8_12		Yes	Des		
Q27	OH nursing experience	WORKYEAR		Yes	%	Bamford,1987	
Q28a	Type of organistion	IN 1_34	Yes		%	Chrovil,1984 Levinsohn,1984 Bamford,1987 Key persons' survey	
Q28b	Other type of organisation	IN 35_43		Yes	Des		
Q29	Current post	POSITION	Yes		Chi		
Q30	Years of current post	POSIYEAR		Yes	Chi	Levinsohn,1984 Cooney,1989	
Q31	Working hours per week	WORKHOUR		Yes	Chi		
Q32	Duty pattern	DUTYPTTN	Yes		Chi		
Q33a	Reasons for choosing a job in OH nursing	RC 1 8	Yes		Log	Levinsohn,1984	
Q33b	Other reasons for choosing a job in OH nursing	RC 9 22		Yes	Des		
Q34a	Reasons for continuing a job in OH nursing	RJ 1_11	Yes		Log		
	Other reasons for continuing a job in OH nursing	RJ 12 19		Yes	Des		
Q34b	Five years plan	FY 1 19		Yes	Chi		
	Ten Years plan	TY 1_19		Yes	Chi		

Ques	Description	Code	Close	Open	Statistical	Reference (Research)	Reference (Non-research)
Q35	Job satisfaction	SATIS 1_18	Yes		Log	Conrad,1985 McGovern,1985	Guzik,1992
Q36	Gender	SEX	Yes		Chi		
Q37	Age group	AGEGR	Yes		Chi	Cooney,1989	
Q38	Marital status	MARITAL	Yes		Chi		
Q39	Salary	SALARY	Yes		Chi	Atherton,1985	
Q40	Staff	STAFF 1 8		Yes	Chi	Bamford,1987	
	Full-time	NOFT 1_8		Yes	%		
	Part-time	NOPT 1 8		Yes	%		
	Total number	NOST 1 8		Yes	%		
Q41	Professional relationship	DPTRELA	Yes		Chi		
Q42	Department importance in the organisation	DPTIMP	Yes		Chi		
Q43	Male employees	NOMEMP		Yes	%		
	Female employees	NOFEMP		Yes	%		
	Total nunmer of employees	TNOEMP		Yes	Chi		
Q44a	Problems and/or barriers	BA 1_4	Yes		%	Key persons' survey	
Q44b	Other problems and/or barriers	BR 5 36		Yes	Des		
Q45	Most contact members	CT 1 6	Yes	Yes	Chi	Key persons' survey	
	Relationship with the most contact member	MR 1_6	Yes	Yes	%	Key persons' survey	
Q46a	Policy of organisation	POLICY	Yes		Chi		
Q46b	Components of OH policy	PCMPT 1_11	Yes	Yes	Log	AAOHN standard,1988	
Q47	Equipments and Facilities	EQUIP 1_18	Yes	Yes	Log	AAOHN standard,1988	
Q48a	OH nursing policy	NPOLICY	Yes		Chi		
Q48b	Components of OH nursing policy	NPCMPT 1 6	Yes		Log	AAOHN standard,1988	
Q49a	OH nursing activities	AC 1 19	Yes		Log	Lusk,1988 AAOHN standard,1988	Parker,1982 Murphy,1989

Ques	Description	Code	Close	Open	Statistical	Reference (Research)	Reference (Non-research)
Q49b	Other OH nursing activities	AC 20_34		Yes	Des		

[a] Des: Descriptive analysis included percentage and mean.
[b] Chi: Chi-square test.
[c] Log: Logistic regression test.

3.5.3 Pilot study

The subjects used for the pilot study were all OH nurses undertaking the first year of the OHND course of the RCN. Between July and August 1991, 28 questionnaires were sent out yielding 17 replies (giving a response rate of 61%).

3.5.4 Findings of the pilot study

As a result of the pilot exercise, minimal changes were made to the main study questionnaire. For example, question 1a, 1b, and 16 only asked respondents to tick the most important roles, functions and subject of continuing education, instead of ranking these priorities.

3.5.5 Data collection

After the pilot study was completed, the main survey of OH nursing practitioners was initiated. The data collection was started in early November 1991 and was completed early in 1992. Using this postal questionnaire, data was collected concerning current OH nursing practice in the workplace, factors believed to influence the nurses' practice, and their needs for future preparation and education.

A total of 346 questionnaires were sent out by registered post with 251 replies being received (giving a response rate of 72.5%). The OH nurses' survey questionnaire can be found in Appendix B3.

3.5.6 Data management

After the collection of data, data management including data coding, entry, and checking was carried out using a personal computer.

Data coding and entry

A numerical coding scheme was implemented to transfer the information of questionnaires to the coding sheet. Closed-ended questions that provide for response alternatives were coded according

to preassigned numerical codes. But qualitative data from open-ended questions such as "other alternatives" or "comment" in the questionnaire was freely typed first and then categorised into a numerical code, if necessary, following procedures analogous to a content analysis. The coded data was then entered into a computer data file using a database management package.

Data checking

Range and consistency checks were performed to find erroneous or inconsistent values which were then corrected according to the original questionnaire. The first step was to examine the distribution of each of the variables to check for possible errors. The next step was to conduct consistency checks, to search for cases where two or more variables were inconsistent. Possible errors were checked against the original questionnaire. In some cases it was possible to correct the data. In other cases, it was necessary to insert a "missing value" code if it was clear that the data were in error.

3.5.7 Data analysis

After data management, data analysis was performed using SPSS for Windows statistical packages, Version 6.0 (Norušis/SPSS Inc., 1993a,b).

Inclusions and exclusions

In order to elucidate the relationship between potential influencing factors and actual roles and functions, the following subjects were excluded: retired nurses, part-time nurses working less than 24 hours per week. However, part-time nurses working over 24 hours per week were included in the analysis of the study subject.

Dependent variables of interest

In this research OH nursing practice is indicated by OH nurses actual roles and functions, these roles and functions were defined as dependent variables. Actual roles included: therapeutic, emergency responsibility, health surveillance, health screening, environmental surveillance, consultant, education, training, management, and research roles. And actual functions included: provision of a routine treatment service, rehabilitation and resettlement, emergency treatment for injuries and illness, health supervision of the worker, assessment of the nature and degree of exposure, undertaking general health surveillance, specific health surveillance, record keeping, health screening for specific disease and disorders, familiarisation with the work environment, informing workers of health hazards, occupational safety, immunisation, individual counselling,

assisting workers with psycho-social problems, health education and promotion, first-aid training for workers, development and maintenance of records, meetings and communication, and co-operation with outside agencies.

Independent variables of interest

The potential influencing factors are divided into two groups: internal and external factors. The internal factors influencing OH nursing practice within the organisation are defined as OH nurses' professional background, OH nurses' perceptions and beliefs, the working environment and the OH and safety team. Regarding OH nurses' professional background the measurement indicators defined were: statutory qualifications, other professional qualification, short professional courses, clinical experience, community experience, and OH nursing experience. Regarding OH nurses' perceptions and beliefs the measurement indicators were defined as: the ideal roles and ideal functions, the definition of OH nursing, the definition of the OH nurse, characteristics of OH nurses, the speciality of OH nursing, and the uniqueness of OH nursing. Measurement indicators concerned with the working environment are defined as the type of organisation, the number of employees, the importance of the OH department, the OH policy, the OH nursing policy, and the equipment and facilities used in the workplace. The OH and safety team included an occupational physician, OH nurse, occupational hygienist, safety officer, first-aider, medical centre attendant, manager and secretary. The related measurement indicators were defined as the number of staff in the OH department, professional relationships, and relationships with team members.

In this study the external factors influencing OH nursing practice outside the organisation were defined as: the economic and financial situation, EEC and UK legislation, working processes and technology changes, politics and social policy, better awareness of health and the environment, OH nursing education and certification, computerization, ecological change, developments in industry, cost effectiveness of disease prevention and early detection, cost-benefit analyses, interdisciplinary competition, developing roles of other nursing practitioners, and the health care delivery system.

Confounding variables

Personal factors may also affect the OH nursing practice. These variable must be controlled in order to obtain an undistorted estimate of the effect of the study factor. In the study the measurement indicators defined as sex, age, marital status, level of current post, working hours,

duty pattern, income, reasons for choosing an OH nursing job, reasons for continuing a OH nursing job, and job satisfaction were the confounding variables.

Analysis strategy

The kappa, the chi-square, and logistic regression statistical tests were chosen because the dependent variables were categorical in nature (i.e. nominal data). The kappa test was used for paired data to analyze the extent of agreement between variables, and the chi-square test was used for univariate analysis of independent variables. The logistic regression tests were used for multivariate analysis of independent variables. The analytical model of the factors influencing OH nursing practice is shown in *Figure 3.2* and *Figure 3.3*.

1) Descriptive analysis

After the data management, the distributions of each of the variables was re-examined, firstly to check that everything appeared to be in order, but secondly to get a feel for the data, that is, to get a good understanding of the characteristics of the study population with respect to the dependent variables (i.e. actual roles and functions) and independent variables of interest.

2) Data reduction

Before commencing the formal analysis, it was necessary to regroup the values of some of the variables. For example, working hours and the number of employees were grouped as categorical variables in the classical method based on stratification. But further grouping was required for categorical variables with a large number of categories. For example, the current post category was regrouped from a scale of 7 to 3, to reduce the number of categories and to increase the accessibility of the effect on actual roles and functions.

3) Agreement analysis

For discovering the agreement between actual roles/functions and ideal roles/functions of OH nurses, Kappa test was used for the analyses This test gives a measure of agreement and has a maximum value of 1.00 when agreement is perfect, and a value of zero when the agreement is no better than by chance. The meaning of Kappa value is shown in *Table 3.3*. (Landis and Koch, 1977)

Table 3.3 The meaning of Kappa values.

Value of Kappa	Strength of agreement
< 0.20	Poor
0.21 - 0.40	Fair
0.41 - 0.60	Moderate
0 61 - 0.80	Good
0 81 - 1.00	Very good

4) Univariate analysis

For independent variables measured or categorised by groups such as the type of organisation and the number of employees, Chi-square test was utilised to examine the differences of OH nursing practice among different groups with the Chi-square value (X^2), degree of freedom (DF), probability (P), percentage and frequency values being quoted. This helped to give an initial idea of those variables that were strongly related to the actual role and function and to show the extent to which the crude estimate of effect is altered when other variables are taken into account.

5) Multivariate analysis

For independent variables measured by multiple dichotomous items such as the characteristics of OH nurses and the policy for OH, logistic regression was used for the analyses with the regression coefficient (B), explanation regression coefficient (Exp B), and probability (P) being quoted. This helped to give an initial idea of those variables that were strongly related to the actual role and function and to show the extent and direction to which the crude effect is altered when other variables are taken into account.

Finally, logistic regression analysis was undertaken to adjust the effects of independent variables (i.e. internal influencing factors) each other and to control the effects of potential confounding variables (i.e. personal factors) considered. Different models were constructed to estimate the effect of dependent variables according to different independent variables. The logistic regression test was utilised to get the net effects of OH nurses' perceptions and beliefs, OH nurses' professional background, working environment, and OH and safety team on the OH nursing practice (i.e. actual roles and functions of the nurses) with the regression coefficient (B), exponential regression coefficient (Exp B), and probability (P) also being quoted.

Figure 3.2 An analytical model of the internal factors influencing OH nursing practice.

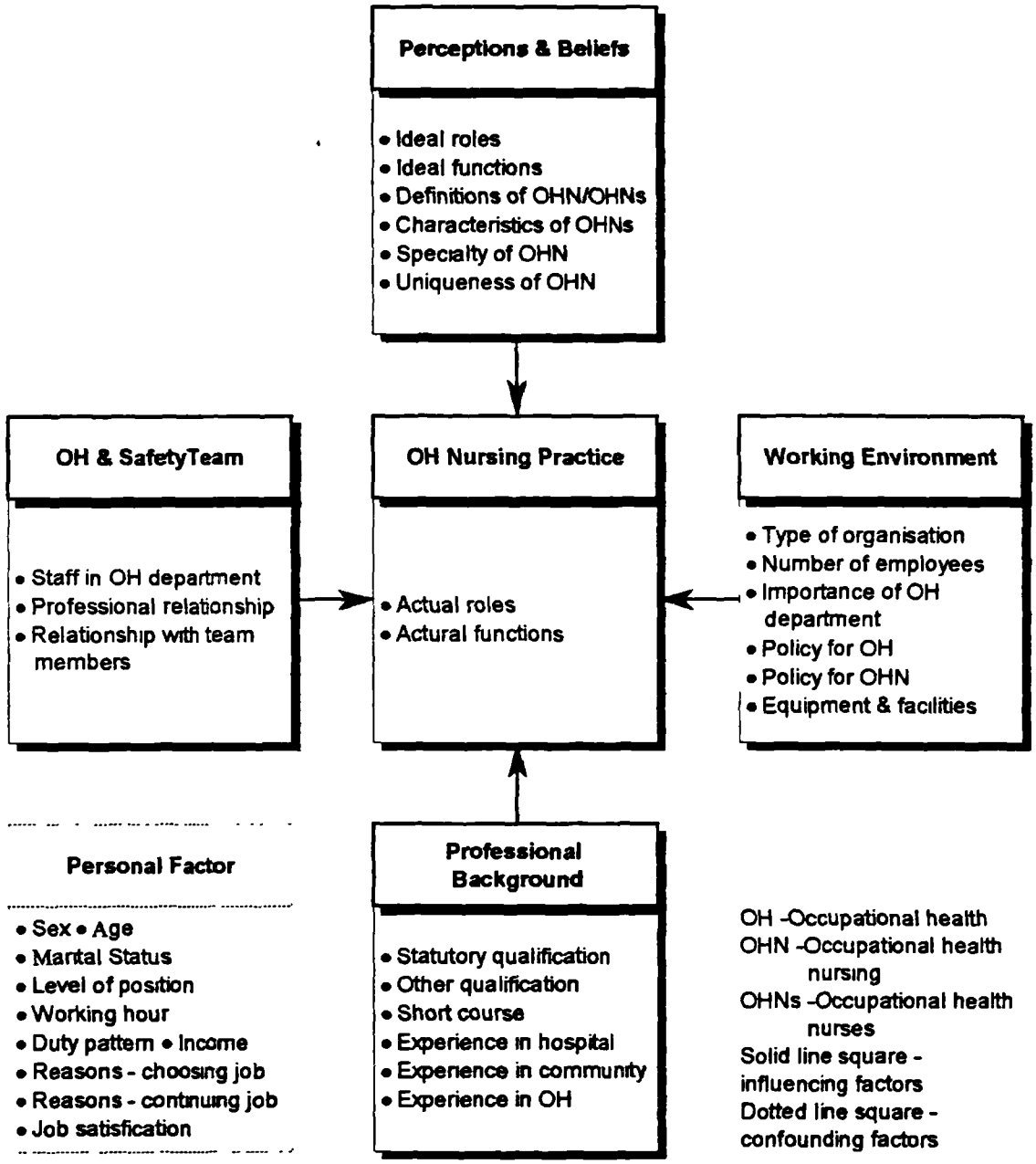


Figure 3.3 An analytical model of the internal and external factors influencing OH nursing practice.

3.5.8 Validating the sample

In an attempt to compare the difference between response and non-response groups, a short questionnaire was sent to the non-response group of OH nurses' in order to collect general information. A total of 79 questionnaire were sent out and 50 replies were received (giving a response rate of 63.3%). The short questionnaire for non-respondents can be found in Appendix B4.

Comparison of characteristics of respondents and non-respondents

Comparison of the general characteristics of OH nurses between response and non-response groups is given in *Table 3.4*.

As can be seen from *Table 3.4*; the majority of respondents and non-respondents were females (93.4%, 98.0% respectively). Four age levels were identified among the respondents and non-respondents group, with a concentration in the middle two age groups (in the range of 35-54 years) and over half (68%) of both the respondent and non-respondent samples were married. The majority (92%) of the statutory qualifications held by respondent and non-respondent groups were that of Registered General Nurse, and over 70% of the two groups held an OHNC or OHND in addition. Almost all of the sample in the respondent and non-respondent groups had hospital nursing experience (97.1%, 95.9%), and 36.5% and 24.4% of the sample in the respondent and non-respondent groups respectively had some previous experience in community nursing. There was little difference between the values of the four time levels spent in the OH nursing field in the respondent and non-respondent groups. The Chi-square test was utilised to compare the general characteristics (e.g. gender, age, marital status, statutory qualification, OH nursing certificate or diploma, hospital nursing experience, community nursing experience, and time spent in the OH nursing field) of OH nurses between response and non-response groups, and there was found to be no significant statistical difference.

Table 3.4 Comparison of the general characteristics of OH nurses between response and non-response groups.

General characteristics	Response group		Non-response group		X^2 (df)	P-value
	No.	%	No.	%		
Sex						
Female	228	93.4	48	98 0	0 81 (1)	0 368
Male	16	6.6	1	2 0		
Age (years)						
25 - 34	45	18.5	13	27.7	3.97 (3)	0.265
35 - 44	71	29.2	10	21 3		
45 - 54	85	35 0	19	40 4		
55 - 65	42	17.3	5	10 6		
Marital status						
Married	166	68.6	32	68.1	2.68 (4)	0.613
Stable partnership	19	7.9	5	10 6		
Single	20	8.3	6	12.8		
Widowed/Divorced	30	12.4	3	6 4		
Separated	7	2.9	1	2.1		
Statutory qualifications						
Registered general nurse	225	92.2	45	91 8	<0.01 (1)	1 000
Enrolled nurse	22	9.0	5	10.2	<0.01 (1)	1 000
Registered midwife	55	22.5	7	14.3	1.21 (1)	0.272
Others	14	5.7	1	2.0	0.51 (1)	0 473
OHNC or OHND						
Yes	184	76.0	35	72.9	0.08 (1)	0.783
No	58	24.0	13	27 1		
Hospital nursing experience						
Yes	237	97.1	47	95 9	<0.01 (1)	1.000
No	7	2.9	2	4 1		
Community nursing experience						
Yes	86	35.5	11	23.4	2.08 (1)	0.149
No	156	64.5	36	76 6		
Time spent in OH nursing (years)						
< 5	61	25.6	9	20.0	2.51 (3)	0 474
5 - 9	63	26.5	10	22.2		
10 - 14	49	20 6	14	31.1		
≥ 15	65	27.3	12	26 7		

The current posts of the occupational health nurses

Comparison of the current posts of OH nurses between response and non-response groups is given in *Table 3.5.*

Table 3.5 Comparison of the current posts of OH nurses between response and non-response groups.

Current post	Response group		Non-response group		X^2 (df)	P-value
	No.	%	No.	%		
Level of post						
Chief/Manager	29	12.0	2	4.2	6.56 (4)	0.161
Advisor	46	19.0	13	27.1		
Senior nurse	119	49.2	20	41.7		
Staff nurse	34	14.0	11	22.9		
Others	14	5.8	2	4.2		
Duty pattern						
Days only	206	84.4	40	81.6	4.38 (3)	0.224
Days usually	17	7.0	2	4.1		
Shifts	17	7.0	7	14.3		
Others	4	1.6	0	0.0		
Working hours per week (hours)						
< 35	48	20.0	7	14.6	3.42 (2)	0.181
35 - 39	150	62.5	27	56.3		
≥ 40	42	17.5	14	29.2		
Income per year (pounds)						
< 10,000	26	10.7	8	17.4	2.49 (4)	0.646
10,000 - 12,999	42	17.4	5	10.9		
13,000 - 15,999	66	27.3	12	26.1		
16,000 - 19,999	69	28.5	14	30.4		
≥ 20,000	39	16.1	7	15.2		
Time spent in this post (years)						
< 2	47	19.3	4	8.2	5.45 (3)	0.142
2 - 3	62	25.4	17	34.7		
4 - 7	65	26.6	11	22.4		
≥ 8	70	28.7	17	34.7		

As can be seen from *Table 3.5*; 49.2% and 41.7% of the sample in the respondent and non-respondent groups respectively held the current post of senior nurse, the rest being in the role of advisor, chief nurse or manager, or staff nurse. The most commonly found duty pattern in the respondent (84.4%) and non-respondent (81.6%) groups were days only. The most commonly found working hours in the respondent (62.5%) and non-respondent (56.3%) groups were 35-39 hours per week, and over half the sample in the respondent (55.8%) and non-respondent (56.5%) groups were paid in the range £13,000 - 19,999 per annum. The most commonly found time spent in the current post was ≥ 8 years (28.7%), and over half the sample in the respondents (55.3%) and non-respondents (57.1%) groups had worked in the current post for ≥ 4 years. The Chi-square test was used to compare the current post (e.g. level of post, duty pattern, working hours per

week, income per year, and time spent in current post) of OH nurses between response and non-response groups, and there was found to be no significant statistical difference.

Actual roles of the occupational health nurses

Comparison of the actual roles of OH nurses between response and non-response groups is given in *Table 3.6.*

Table 3.6 Comparison of the actual roles of OH nurses between response and non-response groups.

Actual roles	Response group		Non-response group		X^2 (df)	P-value
	No.	%	No.	%		
Therapeutic role	109	45.2	22	45.8	<0.01 (1)	1.000
Emergency responsibility role	171	71.0	39	81.3	1.65 (1)	0.199
Health surveillance role	188	78.0	39	81.3	0.94 (1)	0.759
Health screening role	211	87.6	42	87.5	<0.01 (1)	1.000
Environmental surveillance role	96	39.8	15	31.3	0.91 (1)	0.340
Consultant role	76	31.5	6	12.5	6.23 (1)	0 013*
Education role	159	66.0	33	68.8	0.04 (1)	0.838
Training role	98	40.7	21	43.8	0.06 (1)	0 813
Management role	51	21.2	11	22.9	0.01 (1)	0.938
Research role	10	4.1	1	2.1	0.07 (1)	0.787

* P<0.05

As can be seen from *Table 3.6*; the Chi-square test was used to compare the actual roles of OH nurses between response and non-response groups, and there was found to be no significant statistical associations except for the consultative role, where the actual consultant roles were significantly greater for the response group than for the non-response group (P=0.013).

Actual functions of the occupational health nurses

Comparison of the actual functions of OH nurses between response and non-response groups is given in *Table 3.7.*

Table 3.7 Comparison of the actual functions of OH nurses between response and non-response groups.

Actual functions	Response group		Non-response group		X^2 (df)	P-value
	No.	%	No.	%		
Health supervision of workers	148	60 9	27	57 4	0.08 (1)	0.779
Assessment of the nature & degree of exposure	30	12.3	5	10.6	0.01 (1)	0 933
Undertaking general health surveillance	113	46 5	25	53.2	0.46 (1)	0.496
Specific health surveillance	121	49.8	21	44.7	0.23 (1)	0.629
Record keeping	173	71.2	23	48.9	7.91 (1)	0.005*
Health screening	174	71.6	35	74.5	0.05 (1)	0 824
Health education & promotion	171	70 4	38	80.9	1 66 (1)	0 198
Rehabilitation & resettlement	101	41.6	15	31.9	1.15 (1)	0 283
Immunisation	86	35 4	13	27.7	0.73 (1)	0 392
Emergency treatment for accident & illness	181	74 5	33	70.2	0.18 (1)	0 668
Provision of a routine treatment service	142	58 4	31	66.0	0.64 (1)	0.424
Familiarisation with work environment	130	53.5	24	51.1	0.02 (1)	0 884
Informing workers of health hazards	83	34 2	17	36.2	0.01 (1)	0.922
Occupational safety	46	18.9	4	8.5	2 31 (1)	0 128
Individual counselling	177	72.8	35	74.5	<0.01 (1)	0 959
Assisting workers with psycho-social problems	40	16 5	8	17.0	<0.01 (1)	1 000
First-aid training for workers	121	49.8	27	57.4	0.64 (1)	0.423
Development & maintenance of records	146	60.1	26	55.3	0.20 (1)	0.655
Meetings & communication	126	51.9	26	55.3	0.07 (1)	0.782
Co-operation with outside agencies	68	28 0	13	27.7	<0.01 (1)	1.000

* P<0 05

As can be seen from *Table 3.7*; the Chi-square test was used to compare the actual functions of OH nurses between response and non-response groups, and almost of the actual function was found to be no significant statistical difference. Only one actual function the "record keeping" had statistical significant between response and non-response groups (P=0.005).

Activities of the occupational health nurses

Comparison of the activities of OH nurses between response and non-response groups is given in *Table 3.8.*

Table 3.8 Comparison of the activities of OH nurses between response and non-response groups.

Activities	Response group		Non-response group		X^2 (df)	P-value
	No.	%	No.	%		
Health screening	190	77.9	40	81.6	0.16 (1)	0 693
Risk reduction	100	41.0	28	57 1	3.70 (1)	0 054
Counselling	185	75 8	35	71.4	0.22 (1)	0 640
Health education	220	90.2	47	95.9	1.04 (1)	0.309
Rehabilitation	119	48 8	21	42.9	0.36 (1)	0.549
Treatment	93	38.1	18	36.7	<0 01 (1)	0.984
Written nursing procedure & protocols for practice	76	31.1	23	46.9	3.87 (1)	0.049*
Nursing problems	17	7.0	2	4.1	0.19 (1)	0 667
Nursing diagnoses	42	17.2	7	14 3	0.08 (1)	0 771
Nursing activities for problem solving	68	27.9	13	26.5	<0.01 (1)	0.987
Method of evaluation	45	18 4	10	20.4	0.01 (1)	0.904
Physical examinations	196	80.3	33	67.3	3.30 (1)	0.069
Health surveillance	206	84 4	42	85 7	<0.01 (1)	0.991
Epidemiology studies	69	28.3	11	22.4	0.44 (1)	0 509
Comprehensive health history	188	77.0	36	73 5	0.13 (1)	0.723
Physical assessment	74	30.3	14	28.6	0.01 (1)	0.941
Screening & baseline laboratory tests	78	32.0	15	30.6	<0.01 (1)	0.986
Identification of high risk employees	192	78.7	41	83.7	0.35 (1)	0 552
Identification of environmental high risk areas	181	74.2	41	83.7	1.52 (1)	0.218

* P<0.05

As can be seen from *Table 3.8*; the Chi-square test was used to compare the activities of OH nurses between response and non-response groups, and there was found to be no significant statistical difference except in regard to written nursing procedures and protocols for practice, where the response group scored more highly (P=0.049).

Ideal roles of the occupational health nurses

Comparison of the ideal roles of OH nurses between response and non-response groups is given in *Table 3.9*.

Table 3.9 Comparison of the ideal roles of OH nurses between response and non-response groups.

Ideal roles	Response group		Non-response group		X^2 (df)	P-value
	No.	%	No.	%		
Therapeutic role	46	19.1	10	20 4	<0.01 (1)	0.988
Emergency responsibility role	80	33 2	16	32.7	<0.01 (1)	1.000
Health surveillance role	212	88.0	44	89.8	0.01 (1)	0.905
Health screening role	170	70.5	35	71.4	<0.01 (1)	1.000
Environmental surveillance role	164	68 0	31	63.3	0.23 (1)	0.629
Consultant role	96	39.8	17	34.7	0.26 (1)	0.609
Education role	200	83.0	40	81.6	<0.01 (1)	0.983
Training role	82	34.0	21	42.9	1.03 (1)	0.311
Management role	67	27.8	14	28.6	<0.01 (1)	1 000
Research role	68	28.2	11	22.4	0.42 (1)	0 515

As can be seen from *Table 3.9*; the Chi-square test was used to compare the activities of OH nurses between response and non-response groups, and there was found to be no significant statistical difference.

Ideal functions of the occupational health nurses

Comparison of the ideal functions of OH nurses between response and non-response groups is given in *Table 3.10.*

Table 3.10 Comparison of the ideal functions of OH nurses between response and non-response groups.

Actual functions	Response group		Non-response group		X^2 (df)	P-value
	No.	%	No.	%		
Health supervision of workers	158	65.3	31	64 6	<0 01 (1)	1 000
Assessment of the exposure	94	38.8	18	37.5	<0 01 (1)	0 990
Undertaking general health surveillance	105	43.4	25	52.1	0.90 (1)	0.343
Specific health surveillance	129	53.3	24	50.0	0.07 (1)	0.794
Record keeping	131	54.1	20	41.7	2.02 (1)	0.155
Health screening	113	46.7	24	50.0	0.07 (1)	0.794
Health education & promotion	213	88.0	41	85.4	0.07 (1)	0.795
Rehabilitation & resettlement	155	64.0	31	64 6	<0.01 (1)	1.000
Immunisation	34	14.0	5	10.4	0.20 (1)	0.658
Emergency treatment	128	52.9	25	52 1	<0.01 (1)	1.000
Provision of a routine treatment service	35	14.5	6	12.5	0.02 (1)	0.897
Familiarisation with work environment	169	69.8	34	70 8	<0.01 (1)	1.000
Informing workers of health hazards	138	57.0	27	56.3	<0.01 (1)	1.000
Occupational safety	68	28.1	14	29 2	<0.01 (1)	1.000
Individual counselling	166	68.6	35	72.9	0.18 (1)	0 673
Assisting with psycho-social problems	43	17.8	9	18 8	<0.01 (1)	1.000
First-aid training for workers	119	49.2	22	45.8	0 07 (1)	0.791
Development & maintenance of records	135	55.8	28	58.3	0.03 (1)	0.868
Meetings & communication	142	58.7	28	58 3	<0.01 (1)	1.000
Co-operation with outside agencies	108	44.6	20	41.7	0.05 (1)	0.827

As can be seen from *Table 3.10*; the Chi-square test was used to compare the ideal functions of OH nurses between response and non-response groups, and there was found to be no significant statistical difference.

Summary

In summary, there are no significant differences in general characteristics (e.g. demographic details, statutory qualifications, OH nursing certificate or diploma, hospital nursing experience, community nursing experience, and time spent in OH nursing), current job (e.g. level of post, duty pattern, working hours per week, income per year, and time spent in current post), and OH nurses' perceptions (ideal roles and ideal functions) between the response and non-response groups. It may be inferred that respondents are a representative sample of the study population.

3.6 Integration of the results from qualitative and quantitative data

This procedure is to merge qualitative and quantitative data to complement each other by means of comparing the qualitative data from the key persons' survey to the quantitative data from the OH nurses' survey. In addition, the data from the open ended questions and free format comment of OH nurses' survey questionnaires was used to enhance the validity.

In order to examine similarities and differences between key persons' and OH nurses' perceptions about OH nursing practice, relative rank order was utilised instead of original numerical or frequency data. This helps comparing the priority of importance considered by key persons and OH nurses. For example, actual roles and functions of OH nurses were ranked according to frequencies of those chosen by themselves.

3.7 Operational definitions

The following operational definitions were used in this study.

Occupational health: The health of individuals or groups as related to their occupation(s). It is concerned with the two-way relationship between work and health.

Occupational health nurse: A full or part-time Registered/Enrolled nurse who is employed in providing an occupational service. He/she applies specialised nursing knowledge and skills to the conservation, promotion and restoration of the health of people at their place of work, and in this context is a member of an RCN-SOHN local group.

Occupational health nursing practice: The adoption of specific roles and execution of specific functions by an OH nurse involving performance in accordance with the OH nurses' own perceptions and beliefs including learned theories. In this research OH nursing practice is examined using OH nurses actual roles and functions.

Actual roles: The roles which OH nurses actually adopt in a work situation and which have particular *functions* and *behaviours* associated with them. In this study these roles include: environmental surveillance, consultant, education, training, health surveillance, health screening, therapeutic, emergency responsibility, management, and research roles.

Actual functions: The functions carried out by OH nurse in relation to a particular responsibility, in that they fulfil the *purpose* or perform a specific *role* related to that responsibility. In this study these functions are: familiarisation with the work environment, informing workers about health hazards, occupational safety, immunisation, individual counselling, assisting workers with psycho-social problems, health education and promotion, first-aid training for workers, health supervision of the worker, assessment of the nature and degree of exposure, undertaking general health surveillance, specific health surveillance, record keeping, health screening for specific disease and disorders, provision of a routine treatment service, rehabilitation and resettlement, emergency treatment for injuries and illness, development and maintenance of records, meetings and communication, and co-operation with outside agencies.

Ideal roles: The role which is perceived by the OH nurse as ideal in his/her current work situation and which has particular *functions* and *behaviour* associated with it.

Ideal functions: The function which the OH nurse perceives as ideal in his/her current work situation with regard to a particular responsibility, in that they fulfil the *purpose* or perform a specific *role* related to that responsibility.

Internal factors: Internal factors are of two types. Those which related to the OH nurse (OH nurses' perceptions and beliefs and OH nurses' professional background) and those which related to the organisation (the working environment and the OH and safety team).

OH nurses' professional background: The specialised professional qualifications, training and experience that OH nurses possess. The indicators used were: statutory qualifications, other professional qualification, short professional courses, clinical experience, community experience, and OH nursing experience.

OH nurses' perceptions and beliefs: The perceptions and beliefs held by OH nurses, including the awareness, attitudes, values and opinions OH nurses have acquired as a result of their specific life's experiences. In this study the indicators used were: the OH nurse's ideal roles; the OH nurse's ideal functions, OH nurses preferred the definition of OH nursing, OH nurses preferred the definition of the OH nurse, characteristics of OH nurses, elements forming the speciality of OH nursing, and the unique qualities of OH nursing.

Working environment: The physical and psychosocial environment in which a person works. This includes any premises or places in which people are employed or engaged in industrial or other

activities. In this study the indicators related to the working environment were: the type of organisation, the number of employees, the importance of the OH department, the component of the OH policy, the component of the OH nursing policy, and the equipment and facilities used in the workplace.

Occupational health and safety team: The team formed in a specific enterprise in order to implement OH and safety policies. Depending on the size of the organisation, an OH and safety team may be headed by an occupational physician. Generally it will include an OH nurse, who may be complemented by other OH and safety professionals as part of an interdisciplinary team. The staff may be employed on a full-time or part-time basis. In this study it was assumed that the OHS team might include an occupational physician, OH nurse, occupational hygienist, safety officer, first-aider, medical centre attendant, manager and secretary. The measurement indicators were defined as the number of staff in the OH department, the nature of professional relationships, and the nature of relationships with specific team members.

External factors: The factors influencing OH nursing practice outside or external to the organisation. In this study these were categorised: the economic and financial situation, EC and UK legislation, working processes and technology changes, politics and social policy, better awareness of health and the environment, OH nursing education and certification, computerization, ecological change, developments in industry, cost effectiveness of disease prevention and early detection, cost-benefit analyses, interdisciplinary competition, developing roles of other nursing practitioners, and the health care delivery system.

Dependent variable: A variable the value of which is dependent on the effect of other variable(s) [independent variable(s)] in the relationship under study. A manifestation or outcome whose variation we seek to explain or account for by the influence of independent variables. In statistics, the dependent variable is the one predicted by a regression equation. (Last, 1988) In this study the dependent variables were defined as actual roles and functions.

Independent variable: The characteristic being observed or measured that is hypothesized to influence an event or manifestation (the dependent variable) within the defined area of the relationship under study; that is, the independent variable is not influenced by the event or manifestation but may cause it or contribute to its variation. In statistics, an independent variable is one of (perhaps) several variables that appear as arguments in a regression equation. (Last, 1988) In this study independent variables were defined as internal and external influencing factors.

Confounding variable: A variable that can cause or prevent the outcome of interest, and is not an intermediate variable, or associated with the factor(s) under investigation. Such a variable must be controlled in order to obtain an undistorted estimate of the effect of the study factor(s) on risk. (Last, 1988) In this study the confounding variables used were: sex, age, marital status, level of current post, working hours, duty pattern, income, reasons for choosing an OH nursing job, reasons for continuing a OH nursing job, and job satisfaction were confounding variables.

Chapter 4. Findings from the Key Persons' Survey

4.1 Introduction

This part of the survey was undertaken in order to collect data about the perceptions and roles of OH nurses in key positions, and to identify influencing factors which influence OH nursing practice. The method of selecting "key persons" has been described in Chapter 3, Section 3.4.2. Data were collected using a postal open-ended questionnaire. (Appendix B2.)

Responses were collected from 31 key persons comprising the following: the members of the SOHN-EC, the members of the OHMF of the RCN of the UK, the members of the ICOH-NC, and various other key persons involved in OH nursing in other European countries and America.

Six general responsibilities of OH nurses were defined as: promotion, protection, prevention, care, management and research. These concepts are defined as follows:

1) Promotion: promotion of health, involving strategies and actions that seek to expand the positive potential for health.
2) Protection: protection of health, involving strategies and actions that seek to protect the individual and thereby to minimize the impact of exposure to an external agent and the consequences of poor health and disease or injury.
3) Prevention: prevention of ill health, injury and disability; involving strategies and actions that seek to reduce the probability of occurrence of disease and poor health to zero.
4) Care: the recognition and diagnosis of occupational or general health problems the provision of nursing care to the individuals and groups involving to determine the nature of care required, in addition, the management and continuing care of individuals which includes curative care, emergency service and rehabilitation.
5) Management: management of human, material and financial resource requiring rational assessment of situations and systematic selection of goals and policies.
6) Research: detailed study of a subject or an aspect of a subject. The knowledge and skills required for OH nursing research includes epidemiology, statistics and information technology.

4.2 Current posts of key persons

The distribution by gender, work place and current post of key persons is given in *Table 4.1.*

Table 4.1 Gender, workplace and current post of key persons.

Current position	Number	Percent
Sex		
Female	28	90.3
Male	3	9.7
Working place		
Industry	15	48.4
Education	8	25.7
Government	6	19.4
Hospital	2	6.5
Level of post		
Chief/Manager	13	41.9
Adviser	5	16.2
Educator	8	25.7
Senior nursing officer	3	9.7
Senior OH nurse	2	6.5

As can be seen from *Table 4.1*; the majority of respondents were females (90.3%). 48% of the key persons worked in industry, the rest in education institutes (25.7%), government services (19.4%), and hospitals (6.5%). 42% of the respondents had a current post of chief or manager, the rest being in the role of educator (25.7%), adviser (16.2%), senior nursing officer (9.7%), and senior OH nurse (6.5%).

4.3 Occupational health nurses' perceptions and beliefs

4.3.1 Key roles and functions of occupational health nurses

Respondents were asked: "What do you see as being the key roles and functions of the occupational health nurse?". The key persons' perceptions of key roles and functions of OH nurses were divided into seven different conceptual categories. Responses are shown in *Table 4.2.*

Table 4.2 Distribution in areas of the key roles and functions of OH nurses according to key persons from different countries.

Key roles and functions (areas)	United Kingdom	United States	European Countries	Total Number
Promotion	**14/16**	**8/10**	**5/5**	**27/31**
Education	14/16	7/10	5/5	26/31
Training	2/16	0/10	1/5	3/31
Counselling	5/16	3/10	1/5	9/31
Consulting/Advising	5/16	3/10	1/5	9/31
Prevention	**13/16**	**6/10**	**1/5**	**20/31**
Health surveillance	3/16	1/10	1/5	5/31
Health screening	2/16	1/10	0/5	3/31
General prevention	10/16	5/10	0/5	15/31
Management	**5/16**	**8/10**	**1/5**	**14/31**
Management	3/16	8/10	1/5	12/31
Communication/Liaison	3/16	2/10	0/5	5/31
Administration	1/16	3/10	0/5	4/31
Care	**4/16**	**4/10**	**3/5**	**11/31**
Therapeutic	4/16	4/10	3/5	11/31
Emergency responsibility	0/16	0/10	1/5	1/31
Protection	**3/16**	**3/10**	**2/5**	**8/31**
Environmental surveillance	2/16	1/10	2/5	5/31
Health and safety	1/16	3/10	1/5	5/31
Research	**2/16**	**2/10**	**0/5**	**4/31**
Number of key persons	16	10	5	31

As can be seen from *Table 4.2*; the three main groups of main responsibilities were found to be in the areas of promotion (26/31), prevention (20/31), and management (14/31). The three main individual key roles and functions were concerned with education (26/31), general prevention (15/31) and management (12/31).

Analysis of responses to this question demonstrates that when the three national groups are compared, the most important key role and function that is common to each group is promotion, especially the functions of health education, health promotion, promotion of good health/well-being, maintain good health and safety, and counselling.

10 of the 16 UK key persons tended to focus on general prevention which included prevention of ill health/injury, and prevention of occupationally related disease; 8 of the 10 US key persons focused on key roles and functions in management which included financial management, policy

making, programme and policy development; 3 of the 5 European key persons focused on the therapeutic role.

4.3.2 Definition of occupational health nursing and the occupational health nurse

Respondents were asked: "What is your definition of occupational health nursing?" Responses are shown in *Table 4.3*.

Table 4.3 Distribution of the definition of OH nursing according to key persons in different countries.

Purpose and practice	United Kingdom	United States	European Countries	Total Number
Promotion	**8/16**	**8/10**	**2/5**	**18/31**
Education	8/16	7/10	2/5	17/31
Training	1/16	0/10	0/5	1/31
Counselling	2/16	0/10	0/5	2/31
Consulting/Advising	0/16	1/10	0/5	1/31
Prevention	**5/16**	**5/10**	**1/5**	**11/31**
Surveillance of worker's health	1/16	0/10	0/5	1/31
General prevention	5/16	5/10	1/5	11/31
Protection	**3/16**	**1/10**	**3/5**	**7/31**
Environment monitoring/assessment	3/16	1/10	3/5	7/31
Management	**3/16**	**1/10**	**1/5**	**5/31**
Management	1/16	1/10	1/5	3/31
Communication/Liaison	1/16	0/10	0/5	1/31
Administration	1/16	0/10	0/5	1/31
Care	**2/16**	**1/10**	**1/5**	**4/31**
Management of illness/injury	2/16	1/10	1/5	4/31
Other	**5/16**	**3/10**	**1/5**	**9/31**
Number of key persons	16	10	5	31

As can be seen from *Table 4.3*; the most important main groups of purpose and practice mentioned in the definition of OH nursing were promotion (18/31), prevention (11/31) and protection (7/31). The most important individual purposes and practices were education (17/31) and general prevention (11/31) and environment monitoring or assessment (7/31). Comparing the three national groups, the common most important practice was promotion, especially concerning promotion of good health/well-being, and the maintenance of good health. Both 5 of the 16 UK and 5 of the 10 US key persons tended to focus on general prevention, while 3 of the 5 European key persons focused on environmental monitoring and assessment.

Analysis of responses to this question show that most of the definitions of OH nursing included: mention the application of nursing skills to the worker, the application of nursing practice and public health procedures, a professional system of care, and the speciality of professional nursing. The most common subjects mentioned in the definition of OH nursing were workers, and employees or people at work, in the workplace or in a working environment. The key persons stated that OH nursing practice should focus on the promotion of physical, mental and social well being.

A subquestion was "How would you define the term occupational health nurse?". The following main points emerged:

The key persons stated that the person who carries out OH nursing should be a nurse (registered nurse, trained registered general nurse, or qualified nurse), or a specially qualified nurse (OH nurse, a nurse with OH nursing certificate/diploma, a nurse specialising in OH, or a specialist nurse). The qualification required to become an OH nurse was felt to be post registration training and qualifications of an advanced nature in OH nursing, specialised training in principles of OH, and experience in the field of OH.

Respondents believed that the knowledge required in the nursing field included nursing skills and principles in the community and occupational setting, direct care, health education, counselling, legislation,legal,ethical and health issues. The necessary knowledge required in the health field included principles of OH, relationships to business and the work environment, toxicology, industry hygiene, safety and epidemiology.

4.3.3 Characteristics of occupational health nurses

Respondents were asked: "What characteristics do you believe the effective occupational health nurse possesses?". Responses are shown in *Table 4.4*.

Table 4.4 Characteristics of the effective OH nurse according to key persons in different countries.

Characteristics	United Kingdom	United States	European Countries	Total Number
Management	8/16	8/10	2/5	18/31
Communication	9/16	4/10	2/5	15/31
Independent	5/16	3/10	3/5	11/31
Knowledgable	4/16	3/10	1/5	8/31
Questioning	3/16	1/10	1/5	5/31
Assertive	4/16	0/10	1/5	5/31
Intelligent	3/16	0/10	2/5	5/31
Creative	3/16	0/10	1/5	4/31
Flexible	1/16	0/10	3/5	4/31
Empathy	3/16	0/10	1/5	4/31
Confidence	1/16	2/10	0/5	3/31
Maturity	3/16	0/10	0/5	3/31
Integrity	1/16	1/10	1/5	3/31
Courageous	1/16	2/10	0/5	3/31
Other	8/16	2/10	2/5	12/31
Number of key persons	16	10	5	31

As can be seen from *Table 4.4*; the main points emerging include the fact that the three main characteristics that the respondents believed that the effective OH nurse possesses were management (18/31), communication (15/31), and independence (11/31). Comparing the three national groups, 9 of the 16 UK key persons tended to focus on communication; 8 of the 10 US key persons focused on management; and 3 of the 5 European key persons tended to focus on independence. The important specific skills were communication, management and inter-personal skills, while important specific characteristics were being independent, intelligent, inquisitive, and flexible.

4.3.4 Differences between occupational health nursing and generic nursing

Respondents were asked: "Do you think that occupational health nursing is a specialty which differs from generic nursing?", and "If yes, what elements contribute to this difference?". Responses are shown in *Table 4.5*.

Table 4.5 The differences between OH nursing and generic nursing according to key persons in different countries

Practice	United Kingdom	United States	European Countries	Total Number
Prevention	**12/16**	**2/10**	**4/5**	**18/31**
Preventative more than treatment	6/16	2/10	4/5	12/31
Focus on health rather than illness	10/16	0/10	0/5	10/31
Protection	**3/16**	**4/10**	**2/5**	**9/31**
Risk of injury and exposure to hazards	0/16	4/10	1/5	5/31
Focus on the effects of work on health	3/16	0/10	1/5	4/31
Management	**3/16**	**1/10**	**0/5**	**4/31**
High level of decision making	2/16	0/10	0/5	2/31
Management skills	1/16	0/10	0/5	1/31
Liaison with trade union	0/16	1/10	0/5	1/31
Care	**0/16**	**1/10**	**2/5**	**3/31**
Resettlement or replacement	0/16	1/10	1/5	2/31
No treating of illness	0/16	0/10	1/5	1/31
Promotion	**1/16**	**1/10**	**0/5**	**2/31**
Health promoting	1/16	1/10	0/5	2/31
Characteristics of practice				
Work alone/isolation	4/16	4/10	0/5	8/31
More multi-disciplined team	2/16	3/10	0/5	5/31
Advising/caring with people at work	2/16	1/10	1/5	4/31
Work with organisation/industry	3/16	0/10	0/5	3/31
Special knowledge and skills	3/16	5/10	2/5	10/31
Other	2/16	0/10	0/5	2/31
Number of key persons	16	10	5	31

Thirty of the key persons believed that there was a difference between OH nursing and generic nursing, with only one key person stating that there was no difference. As can be seen from *Table 4.5*, the top two general nursing practice fields chosen were prevention (18/31) and protection (9/31). Comparing the three national groups, 12 of the 16 UK key persons and 4 of the 5 European key persons tended to focus on prevention, while only 2 of the 10 US key persons tended to do so. Of the US key persons 4 indicated instead a focus on protection.

The top specific practice topics chosen within the field of "prevention" were the focus on health rather than illness, and preventive activities more than treatment, whereas topics chosen from the field of "protection" included a focus on the effects of work on health and health on work, risk of injury and exposure to hazards.

Characteristic differences between OH nursing and general nursing, according to the key persons, included OH nurses working alone, autonomy, being group orientated, being in a more multi-disciplined team, working for a profit organisation, the influence of business philosophy, good business and management experience, more challenges, demonstrating individual worth to management, and not being perceived as a "real" nurse by clients.

It was also stated that OH nursing serves a different population since OH nurses work with an organisation or industry, advising and caring for people at work. The OH nurses were said to require special knowledge, about subjects such as risk factors, regulations and laws which define practice, as well as specialist knowledge and skills, a wide range of general knowledge and skills, good communication skills, marketing, and surveying skills.

4.3.5 The relationship between community health nursing and occupational health nursing

Respondents were asked: "What relationship if any exists between community health nursing and occupational health nursing?". Responses are shown in *Table 4.6*.

Table 4.6 The relationship between community health nursing and OH nursing according to key persons in different countries.

Relationship	United Kingdom	United States	European Countries	Total Number
Very strong	2/16	9/10	3/5	14/31
Very little	9/16	0/10	2/5	11/31
Some contact	2/16	0/10	0/5	2/31
Quite strong	2/16	0/10	0/5	2/31
None	1/16	0/10	0/5	1/31
Number of key persons	16	10	5	31

As can be seen from the *Table 4.6*; the main relationships identified between community health nursing and OH nurses were mainly at the two extremes of opinion: "very strong" (14/31), and" very little" (11/31). Comparing the three national groups, 9 of the 16 UK key persons indicated

very little contact, while 9 of the 10 US key persons and 3 of the 5 European key persons indicated very strong contact.

Comparison of the similarities and differences between community health nursing and OH nursing according to key persons in different countries is shown in *Table 4.7.*

Table 4.7 Comparison of the similarities and differences between community health and OH nursing according to key persons in different countries.

Categories	Similarities between OHN[a] & CHN[b]	Differences between OHN & CHN
Location	Home focus Work alone Workplace is part of community Environment is the same Unit of analysis = community	Work based - no community health practice Working conditions OHN - directed at workforce CHN - community/family setting OHN - specific work processes in specific industry
Practice	Preventive emphasis Preventive/promotive activities Continuity Goal = highest level of health, and to prevent disease	CHN = smaller focus on OH: OHN = OH is main focus OHN - applies public health nursing skills to practice and clients OHN refer client to community health providers (CHN)
Subject	Client group/families "Healthy person" focus, not patients Close relationship with client Population focus Influencing health of community	CHN = Individual/family and home; OHN = environment CHN = population is community; OHN = population is employees, plus spouses, and dependents
Knowledge and skills	Knowledge of assessing populations Health problems using an aggregate approach Epidemiological skills Good interpersonal skills	

[a] OHN: occupational health nursing.
[b] CHN: community health nursing.

The similarities between community health nursing and OH nursing can be stated as being the following:

1) Location: Both work alone in the same general environment (the community) and have a degree of home focus.

2) Practice: Both their goals focus on a higher level of health, as well as continuing preventive and promotive activities.

3) Subject: They both have a population focus and have close relationships with the client (and family). The focus is on healthy persons, not patients.
4) Knowledge and skills: Both require knowledge in assessing population health problems using an aggregate approach, and so interpersonal and epidemiological skills are also needed.

The differences between community health nursing and OH nursing are as follows:
1) Location: Community health nurses work in community and family settings, whereas OH nurses work in a specific industry but where there are specific work processes.
2) Practice: the community health nurse has a smaller focus on OH, whereas the OH nurse's main focus is on OH. OH nurses refer their clients to the community health providers. The reverse situation seldom occurs.
3) Subject: Community health nurses focus on individual families and homes, whereas OH nurses focus on the environment. The community health nursing focus population is the community, whereas the OH nursing focus population is the workforce, along with their spouses and dependents.

4.3.6 The unique features of occupational health nursing

Respondents were asked: "What do you feel is unique about the field of occupational health nursing?". Responses are shown in *Table 4.8*.

Table 4.8 Distribution of unique fields of OH nursing according to key persons in different countries.

Unique field	United Kingdom	United States	European Countries	Total Number
Responsibilities	**4/16**	**4/10**	**3/5**	**11/31**
Prevention	2/16	1/10	1/5	4/31
Protection	2/16	1/10	1/5	4/31
Management	0/16	1/10	3/5	4/31
Promotion	0/16	1/10	1/5	2/31
Care	1/16	0/10	0/5	1/31
Characteristics of practice	**7/16**	**8/10**	**2/5**	**15/31**
Autonomy	2/16	3/10	0/5	5/31
Work alone/isolation	3/16	2/10	0/5	5/31
Multidisciplinary within the speciality	1/16	2/10	0/5	5/31
Mixture practice	0/16	1/10	1/5	2/31
Other	2/16	2/10	1/5	5/31
Subject	**4/16**	**1/10**	**1/5**	**6/31**
Well people	2/16	0/10	1/5	3/31
Group not individual orientated	2/16	0/10	1/5	3/31
Employee	0/16	1/10	0/5	1/31
Knowledge and skills	**3/16**	**2/10**	**0/5**	**5/31**
Location	**3/16**	**2/10**	**0/5**	**5/31**
Number of key persons	16	10	5	31

As can be seen from *Table 4.8*; the top two unique fields chosen were characteristics of practice (15/31) and responsibilities (11/31). Comparing the three national groups, the UK respondents tended to focus on practice (7/16) and subject (4/16); whereas the US and European respondents focused on characteristics of practice (US: 8/10; European: 2/5) and responsibilities (US. 4/10; European: 2/5).

The top specific topics chosen within the field of "characteristics of practice" were the focus on autonomy (5/31), working alone and isolation (5/31), and being multidisciplinary within the

speciality (5/31), whereas topics chosen from the field of "responsibilities" included the focus on prevention, protection and management.

The unique field of OH nursing according to key persons in different countries can be stated as being the following:

1) Responsibilities:
(1) Promotion: Education regarding general, environmental, and OH risks, advising for better health knowledge and awareness.
(2) Protection: Improves working environment, ability to recognise risk factors, and potentially hazardous work environments.
(3) Prevention: Health surveillance and maintenance, and prevention of ill health in the workplace.
(4) Care: Diagnostic and treatment in the workplace.
(5) Management: Direct influential contact with production and service managers as well as decision makers, ethical issues, legal conflicts, financial consideration, and being a consultant to management.

2) Characteristics of practice: Autonomy, working alone and isolation, multidisciplinary within the speciality, holistic approach, responsibility workers' health, diversity of problems and challenges, mixture of preventive medicine and management, providing direct care as well as a prevention programme, providing continuing care, long term relationship with population, trend setter for broadening nursing practice.

3) Subject: Well people, group, not individual-orientated, focus on employees, promotes individual, group and organisation health.

4) Knowledge and skills: Other nurses have a broader expectation of OH nurses' knowledge. Uniquely among nurses, they also have knowledge of business activities and industrial processes. The main knowledge base is concerned with the effects of the working environment on health. They also possess a wide diversity of skills, as well as unique skills and competencies.

5) Location: Based in the workplace, variety of settings and cultures, working in an environment dedicated to production and profit.

4.4 Type of organisation

Respondents were asked: "In which different settings do occupational health nurses function in this country?". Responses are shown in *Table 4.9*.

Table 4.9 Distribution of the different settings for OH nurses according to key persons in different countries.

Different service setting	United Kingdom	United States	European Countries	Total Number
Industry	11/16	9/10	2/5	22/31
Hospital service	10/16	8/10	0/5	18/31
Public, social and private service	9/16	6/10	2/5	17/31
Commerce	1016	2/10	0/5	12/31
Educational institutions	5/16	3/10	0/5	8/31
Local government	4/16	2/10	1/5	7/31
Insurance and banking	1/16	3/10	0/5	4/31
Agriculture centres	0/16	2/10	0/5	2/31
Construction	0/16	1/10	0/5	1/31
Transport	0/16	1/10	0/5	1/31
Other	**3/16**	**3/10**	**1/5**	**7/31**
Every place of work	3/16	1/10	1/5	5/31
Correctional facilities (prison)	0/16	1/10	0/5	1/31
Non-manufacturing	0/16	1/10	0/5	1/31
Number of key persons	16	10	5	31

As can be seen from *Table 4.9*; the three main settings for OH nurses were in industry (22/31), hospital services (18/31), and in public, social and private services (17/31). Comparing the different settings according to the three national groups, the most important workplaces appears to be in industry

4.5 Current changes in occupational health nursing and factors influencing change

4.5.1 Current changes in occupational health nursing

Respondents were asked: "In your opinion is occupational health nursing changing at present?", and "If yes, in what way is it changing ?". Responses are shown in *Table 4.10*.

Table 4.10 Distribution of the changes in OH nursing according to key persons in different countries.

Changes	United Kingdom	United States	European Countries	Total Number
OH nursing practice change	2/16	3/10	2/5	7/31
Internal change	**7/16**	**3/10**	**1/5**	**11/31**
OH nurses' perceptions and beliefs	3/16	2/10	1/5	6/31
Working environment	2/16	1/10	0/5	3/31
OH nursing professional background	1/16	0/10	0/5	1/31
OH and safety team	1/16	0/10	0/5	1/31
External change	**6/16**	**5/10**	**3/5**	**14/31**
OH nursing education	2/16	1/10	1/5	4/31
Policy and legislation	2/16	1/10	1/5	4/31
Economics evaluation	0/16	3/10	0/5	3/31
Awareness of health and environment	1/16	0/10	2/5	3/31
Economic situation	2/16	1/10	0/5	3/31
Health care delivery system	0/16	2/10	0/5	2/31
Changing industrial system	0/16	1/10	0/5	1/31
Social change	0/16	1/10	0/5	1/31
Number of key persons	16	10	5	31

All of the key persons thought that OH nursing is changing at the present time. As can be seen from *Table 4.10*; the three main changes in OH nursing are the areas of the OH nursing practice (7/31), OH nurses' perceptions and beliefs (6/31), OH nursing education (4/31) and policy and legislation (4/31). Comparing the changes according to the three national groups, 3 of the 16 UK key persons tended to focus on OH nurses' perceptions and beliefs change, 3 of the 10 US key persons tended to focus on the economics evaluation, and 2 of the 5 European key persons tended to focus on OH nursing practice and awareness of health and environment.

Specific changes detailed included the role change from a treatment role to a role in prevention; role development and expansion; being recognised as a speciality; increased emphasis on cost benefit analysis; changes arising due to the economic recession and new legislation.

4.5.2 Factors influencing change

Respondents were asked: "What do you feel are the factors which are currently influencing these changes?". Responses are shown in *Table 4.11*.

Table 4.11 Distribution of the influencing factors for OH nursing according to key persons in different countries.

Influencing factors	United Kingdom	United States	European Countries	Total Number
Internal factors	**9/16**	**6/10**	**1/5**	**16/31**
OH nurses' perceptions and beliefs	6/16	2/10	0/5	8/31
Working environment	4/16	2/10	1/5	7/31
OH nursing professional background	0/16	1/10	0/5	1/31
OH and safety team	0/16	1/10	0/5	1/31
External factors	**16/16**	**10/10**	**3/5**	**29/31**
Policy and legislation	11/16	1/10	1/5	13/31
OH nursing education	6/16	2/10	1/5	9/31
Economic situation	5/16	1/10	0/5	6/31
Economics evaluation	2/16	3/10	0/5	5/31
Social change	0/16	2/10	2/5	4/31
Changing industrial system	0/16	1/10	0/5	1/31
Awareness of health and environment	1/16	0/10	0/5	1/31
Number of key persons	16	10	5	31

As can be seen from *Table 4.11*; the most common general influencing factors were policy and legislation (13/31), the OH nursing education (9/31), OH nurses' perceptions and beliefs (8/31) and working environment (7/31). Comparing the three national groups, 11 of the 16 UK key persons tended to focus on policy and legislation, while 3 of the 10 US key persons focused on the economics evaluation, and 2 of the 5 European key persons focused on the social change. More detailed influencing factors included a more academic education program, and the need for cost benefit analysis, economic recession and legislation.

4.5.3 Main issues and problems of occupational health nursing

Respondents were asked: "What do you feel are the main issues and problems that occupational health nursing is facing at present?". Responses are shown in *Table 4.12.*

Table 4.12 Distribution of the main issues and problems of OH nursing according to key persons in different countries.

Main issues and problems	United Kingdom	United States	European Countries	Total Number
OH nursing professional issues	8/16	3/10	2/5	13/31
Policy and legislation	8/16	2/10	0/5	10/31
Economic	8/16	1/10	1/5	10/31
OH nurses' perceptions and beliefs	7/16	1/10	1/5	9/31
OH nursing practice	2/16	6/10	1/5	9/31
Working environment	4/16	4/10	1/5	9/31
OH and safety team	0/16	1/10	3/5	4/31
Social change	0/16	1/10	0/5	1/31
Environment issues	0/16	1/10	0/5	1/31
Industrialisation	0/16	1/10	0/5	1/31
Other	0/16	1/10	1/5	2/31
Number of key persons	16	10	5	31

As can be seen from *Table 4.12*; the most popular general areas for the main issues and problems are the focus on OH nursing professional issues (13/31), economic issues (10/31), policy and legislation (10/31), OH nurses' perceptions and beliefs (9/31), OH nursing practice (9/31), and the working environment (9/31). Comparing the three national groups, 8 of the 16 UK key persons tended to focus on OH nursing professional issues, economics and policy and legislation; 6 of the 10 US key persons focused on OH nursing practice in order to achieve more independent and advanced nursing practice; and 3 of the 5 European key persons tended to focus on the lack of understanding of the role and function within the OH and safety team.

The specific main issues and problems mentioned included the quality of education due to the lack of training , inadequate funding for education and training; alterations in work practice, lack of understanding or recognition of the OH nurse' role, the recession, and the influence of the EEC.

4.6 The future concerns of occupational health nursing

Respondents were asked: "What do you believe the future holds for occupational health nursing?". Responses are shown in *Table 4.13* and *Table 4.14*.

Table 4.13 Distribution of what the future holds for OH nursing according to key persons in different countries.

What the future holds	United Kingdom	United States	European Countries	Total Number
OH nursing professional issues	9/16	6/10	2/5	17/31
Policy and legislation	4/16	1/10	2/5	7/31
OH nursing practice	1/16	4/10	0/5	5/31
Working environment	0/16	3/10	1/5	4/31
OH nurses' perceptions and beliefs	1/16	0/10	2/5	3/31
OH and safety team	0/16	1/10	2/5	3/31
Economic	2/16	0/10	0/5	2/31
Social change	0/16	0/10	0/5	0/31
Environment issues	0/16	0/10	0/5	0/31
Industrialisation	0/16	0/10	0/5	0/31
Other	1/16	0/10	0/5	1/31
Number of key persons	16	10	5	31

As can be seen from *Table 4.13*; the top two general areas of what the future holds for OH nursing are the focus on OH nursing professional issues (17/31), and policy and legislation (7/31). Comparing the three national groups, 9 of the 16 UK key persons and 6 of the 10 US key persons tended to focus on OH nursing professional issues; while 2 of the 5 European key persons tended to focus on OH nurses' perceptions and beliefs, OH nursing professional issues, and policy and legislation.

The distribution of what the future holds for OH nursing according to key persons are shown in *Table 4.14*.

Table 4.14 Distribution of what the future holds for OH nursing according to key persons.

Future holds	Positive	Neutral	Negative
OH nurses' perceptions and beliefs	Continuing specialist. post-basic qualification integrated within community and public health. Unique role in workplace	Pedagogic. Evaluation of OH nurses will start from their use of health and nursing theories and models.	None
OH nursing practice	More responsibility. Broader based practice. Expanded role. Increased preventive and health surveillance programmes. Greater utilisation of OH nurses in management of health and safety issues at work. All nurses in any field will have some OH knowledge. Nurses will refer clients to appropriate providers.	None	None
OH nursing professional issues	Greater recognition. More OH consultants. More OH nurses. Good opportunities. Successful.Effective. Exciting moves towards health promotion and links with other specialities. Services will be promoting health, maintaining health, preventing ill-health, and offering various lifestyle programmes. If trained nurses can be sold to employers, future is good. Paradigms about OH nursing will change. With improved economic circumstances OH nursing will have an important role in providing appropriate human resources for industry.	Have to meet challenges with confidence. Will be dependent on OH nurses themselves. Future id dependent on OH nurse's willingness to recognise and act on opportunities arising from health care dilemmas.	Lower priority if policies remain unclear. Unless OH nurses change and become cost-effective, they will be replaced by contract nurses. Future is bleak,the work will be consumed by other primary health care specialities.
OH and safety team	Multi-disciplinary team work. Emphasis on inter-disciplinary links. OH nurses will be the project leader.	None	None
Working environment	The "fixer" of the workplace. Opportunities with smaller employers. Diversity of practice settings. More emphasis on health care workers, more OH nurses in hospital settings.	None	None
Economic issues	None	Existence depends on economic climate.	Tighter economic control on OH health education and promotion programmes. Uncertainty due to recession.
Policy and legislation	With legislative support satisfying future and increased profile. Changing legislation may increase OH nurses in small industries. Future holds great deal if leaders of industry and government can be enlightened. More international co-operation.	Dealing with regulatory requirements. Involvement with EEC.	None
Health care delivery system	Part of health care system, many work opportunities.	None	None
Other	Optimistic, greater involvement within industry and commerce.	None	None

As can be seen from *Table 4.14*; in general most of the key persons believed that there was a positive future for OH nursing. All the comments relating to OH nursing practice, the OH and safety team, and the health care delivery system, were positive. There were no negative comments relating to OH nurses' perceptions and beliefs, and policy and legislation. However, no positive comments were made concerning economic issues, with only the UK key persons mentioning this aspect of OH nursing. Concerning OH nursing professional issues, policy and legislation, although there were some negative comments, the overall consensus was for a positive future.

4.7 Educational needs of occupational health nurses

4.7.1 Educational preparation for occupational health nurses

Respondents were asked: "What kind of basic educational preparation do you feel occupational health nurses need?". Responses are shown in *Table 4.15*.

Table 4.15 The Qualification needed for OH nurses according to key persons in different countries.

Qualification	United Kingdom	United States	European Countries	Total Number
Qualification	**10/16**	**1/10**	**1/5**	**12/31**
RGN	10/16	1/10	1/5	12/31
Health visitor	2/16	0/10	0/5	2/31
District nurse	1/16	0/10	0/5	1/31
Speciality	**5/16**	**4/10**	**3/5**	**12/31**
OHNC	1/16	0/10	0/5	1/31
OHND	4/16	1/10	2/5	7/31
Degree in nursing with OH nursing training	0/16	1/10	1/5	2/31
MSc in OH nursing or Management	1/16	2/10	0/5	3/31
Nursing	**1/16**	**8/10**	**1/5**	**10/31**
Diploma in nursing	1/16	0/10	1/5	2/31
Bachelor's degree in nursing	0/16	8/10	0/5	8/31
Other	**3/16**	**0/10**	**0/5**	**3/31**
RGN & Specialist OH nurse	2/16	0/10	0/5	2/31
RGN & ≥ 2 years hospital experience	1/16	0/10	0/5	1/31
Number of key persons	16	10	5	31

As can be seen from *Table 4.15;* the main educational preparations for OH nurses were qualification (12/31), speciality training (12/31) and nursing training (10/31). Comparing the three national groups, 10 of the 16 UK key persons tended to focus on Registered general nurse; 8 of the 10 US key persons focused on the Bachelor degree in nursing; and 3 of the 5 European key persons focused on speciality training.

The distribution of the basic educational preparation requirement for OH nurses according to key persons in different countries is shown in *Table 4.16.*

Table 4.16 The Basic educational preparation needed for OH nurses according to key persons in different countries.

Basic education	United Kingdom	United States	European Countries	Total Number
Clinical knowledge/skills	7/16	0/10	1/5	8/31
OH and safety	3/16	0/10	1/5	4/31
Managerial/administration	1/16	0/10	2/5	3/31
Teaching	1/16	0/10	2/5	3/31
Legislation	2/16	0/10	0/5	2/31
Research related	0/16	1/10	1/5	2/31
Personal development	1/16	0/10	0/5	1/31
Health promotion	0/16	0/10	1/5	1/31
Communications/interpersonal skills	0/16	0/10	1/5	1/31
Social concerns/problems	0/16	0/10	1/5	1/31
Business skills	0/16	1/10	0/5	1/31
Professional issues	0/16	0/10	0/5	0/31
Screening/health assessment	0/16	0/10	0/5	0/31
Managerial/personnel	0/16	0/10	0/5	0/31
Other	1/16	0/10	1/5	2/31
Number of key persons	16	10	5	31

As can be seen from *Table 4.16*; the most important basic knowledge and preparation for OH nursing practice was identified as clinical knowledge and skills (8/31).

4.7.2 Areas of continuing education for occupational health nurses

Respondents were asked: "How important do you think continuing education is for occupational health nurses?", and "What areas do you feel are most important?". Responses are shown in *Table 4.17*.

Table 4.17 Areas of continuing education for OH nurses according to key persons in different countries.

Continuing education	United Kingdom	United States	European Countries	Total Number
Legislation	12/16	3/10	1/5	16/31
OH and safety	5/16	4/10	4/5	13/31
Managerial/administration	4/16	6/10	2/5	12/31
Communication/interpersonal skills	4/16	4/10	2/5	10/31
Clinical knowledge/skills	7/16	2/10	0/5	9/31
Professional issues	7/16	1/10	1/5	9/31
Research related	3/16	2/10	1/5	6/31
Health promotion	2/16	2/10	1/5	5/31
Screening/health assessment	0/16	2/10	0/5	2/31
Social concerns/problems	1/16	1/10	0/5	2/31
Managerial/personnel	0/16	1/10	1/5	2/31
Business skills	1/16	1/10	0/5	2/31
Teaching	0/16	0/10	1/5	1/31
Personal development	0/16	0/10	0/5	0/31
Other	1/16	3/10	1/5	5/31
Number of key persons	16	10	5	31

All of the key persons believed that continuing education was very important, because OH nurses work in isolation and need constant up-dating. As can be seen from *Table 4.17*; the most important emerging influences of continuing education were legislation (16/31), OH and safety (13/31), management and administration (12/31), and communication and interpersonal skills (10/31). Comparing the three national groups, 12 of the 16 UK key persons tended to focus on legislation; 6 of the 10 US key persons focused on management and administration; and 4 of the 5 European key persons tended to focus on OH and safety.

The most important specific areas of continuing educational were legislation, management skills, health promotion, epidemiology, ergonomics, industrial hygiene, nursing practice, and professional updating.

4.7.3 Special training needs of occupational health nurses

Respondents were asked: "Do you consider special training in occupational health nursing necessary for practice?", and "If yes, please write the specific topic". Responses are shown in *Table 4.18*.

Table 4.18 Areas of special training for OH nurses identified by key persons in different countries.

Special training	United Kingdom	United States	European Countries	Total Number
OH and safety	6/16	4/10	3/5	13/31
Clinical knowledge/skills	2/16	4/10	0/5	6/31
Managerial/administration	3/16	2/10	1/5	6/31
Legislation	2/16	3/10	1/5	6/31
Health promotion	1/16	3/10	1/5	5/31
Screening/health assessment	0/16	3/10	1/5	4/31
Communication/interpersonal skills	1/16	1/10	2/5	4/31
Research related	0/16	3/10	1/5	4/31
Teaching	1/16	1/10	1/5	3/31
Business skills	1/16	1/10	1/5	3/31
Managerial/personnel	0/16	2/10	0/5	2/31
Professional issues	1/16	0/10	1/5	2/31
Personal development	0/16	0/10	0/5	0/31
Social concerns/problems	0/16	0/10	0/5	0/31
Other	3/16	0/10	1/5	4/31
Number of key persons	16	10	5	31

Twenty nine key persons believed that OH nurses need special training while only two key persons thought that there was no need for special training. As can be seen from *Table 4.18*; the most important general areas of special training for OH nurses were seen to be OH and safety (13/31), legislation (6/31), management and administration (6/31), and clinical knowledge and skills (6/31). Comparison of the three national groups reveals that they all agreed that OH and safety is the most important special training issue.

The important specific training items were toxicology, health hazards, environment issues, health promotion, epidemiology, and teaching and education skills. .

4.8 A model for occupational health nursing practice

Respondents were asked: "Do you think occupational health nursing needs a model to guide its practice?", and "If yes, why?". A comparison of the reasons given by key persons in different countries to why they agree or disagree that a model for OH nursing practice is needed are shown in *Table 4.19*.

Analysis of this question demonstrated that twenty three of the key persons believed that there was a need for a model to guide OH nursing practice, whereas five of the key persons believed that there was no need for such a model. Three of the key persons stated that they did not know if a model was required or not.

Table 4.19 Reasons given by key persons in different countries for agreeing or disagreeing that a model for OH nursing practice is needed.

Category	Agreement	Disagreement
Practical	A need to have a standard Several models to accommodate diversity Internal vision critical for independent practice	Diversity of practice (not just one model)
Theoretical	Specialist knowledge base More models needed for education and research Forward looking	Needs (only) central principles around which OH may be practised
Other	Professional security Respect for other people and their integrity	It is a disservice to standardise the profession

As can be seen from *Table 4.19*; the reasons for the key persons agreeing that there was a need for a model to guide OH nursing practice can be stated as following:

1) Practice. The key persons thought that there was a need for: standardisation in order to provide structured plans and guidelines; to set an international level of standards; to give conformity; to create a framework for effective practice; to give efficient and consistent practice; to help articulate work activities and vision; and to identify the mission, goals, and objectives. They also

stated that several models were needed to accommodate diversity and therefore needed to be flexible in order to promote effective care in diverse settings. Finally "internal vision" or personal characteristics were identified as critical for independent practice.

2) Theoretical: The key persons thought that a specialist knowledge base needed to have a theoretical base to clarify and define OH nursing practice; and that a theoretical framework would be required for effective education and evaluative research.

3) Other: Other reasons for requiring a model were professional security and respect for other people and their integrity

The reasons for the key persons disagreeing that there was a need for a model to guide OH nursing practice are as follows:

1) Practice: The key persons thought that there was no need for a model because OH nursing practice is so diverse that one model would not be enough.

2) Theoretical: The key persons thought that central principles were needed around which OH may be practised.

3) Other: The key persons thought that it was a disservice to standardise the profession.

Respondents were asked: "What type of model, if any, you feel is most appropriate?", "And why?". Responses are shown in Table 4.20.

Table 4.20 Type of model identified according to key persons in different countries.

Type of model	United Kingdom	United States	European Countries	Total Number
Hanasaari model	8/12	0/6	1/5	9/23
Orem's model	0/12	1/6	1/5	2/23
Nursing process	0/12	1/6	1/5	2/23
Health belief model	0/12	1/6	0/5	1/23
Windmill model	1/12	0/6	0/5	1/23
Other	0/12	2/6	0/5	2/23
Number of key persons	12	6	5	23

As can be see from *Table 4.20*; twenty three of the key persons named a model. The most well-known model for OH nursing practice was the Hanasaari model (9/23). Comparing the three

national groups, 8 of the 12 UK key persons tended to focus on the Hanasaari model; while the US and European key persons did not focus on any particular model.

The reasons given by the key persons for choosing the Hanasaari model are that it can be used in education, it is futuristic, it has practical applications, it indicates inter-disciplinary communications, is a theoretical framework, in addition it implies a global approach, and contains all the relevant aspects of OH practice; although two key persons felt that it was probably the best attempt to date but that it is complex and confusing.

4.9 Characteristics of occupational health nursing managers

4.9.1 Actual roles and functions of occupational health nursing managers

Respondents were asked: "What key roles and functions do you play in your workplace?". Responses are shown in *Table 4.21*. (Only OH nursing managers were asked this question.)

Table 4.21 Actual roles and functions of OH nursing managers according to key persons in different countries.

Key roles and functions	United Kingdom	United States	Total Number
Management	**8/8**	**5/5**	**13/13**
Administration	3/8	2/5	5/13
Communication/Liaison	1/8	0/5	1/13
Management	8/8	5/5	13/13
Promotion	**6/8**	**2/5**	**8/13**
Education	4/8	2/5	6/13
Training	2/8	0/5	2/13
Consulting/Advising	5/8	2/5	7/13
Research	**1/8**	**0/5**	**1/13**
Number of key persons	8	5	13

As can be seen from *Table 4.21*; the two main groups of actual roles and functions were found to be management (13/13) and promotion (8/13). The top three individual key roles and functions were management (13/13), consulting and advising (7/13), and education (6/13). Comparing the two national groups (the US and the UK), the most important common practice was management.

4.9.2 Activities of occupational health nursing manager

Respondents were asked: "What routine activities do you undertake at least once a week?". Responses are shown in *Table 4.22.*

Table 4.22 Routine activities of OH nursing manager according to key persons in different countries.

Activities	United Kingdom	United States	Total Number
Management	**8/8**	**4/5**	**12/13**
Administration	4/8	2/5	6/13
Communication/Liaison	4/8	3/5	7/13
Management	5/8	4/5	9/13
Promotion	**4/8**	**3/5**	**7/13**
Education	2/8	3/5	5/13
Training	2/8	0/5	2/13
Consulting/Advising	1/8	0/5	1/13
Counselling	2/8	0/5	2/13
Research	**2/8**	**1/5**	**3/13**
Prevention	**1/8**	**1/5**	**2/13**
Health screening	1/8	1/5	2/13
Protection	**1/8**	**0/5**	**1/13**
Environment surveillance	1/8	0/5	1/13
Number of key persons	8	5	13

As can be seen from the *Table 4.22*; the three main groups of activities were found to be management (12/13), and promotion (7/13). The three individual activities were management (9/13), communication or liaison (7/13), and administration (6/13).

4.9.3 Problems and barriers influencing occupational health nursing managers

Respondents were asked: "What problems and/or barriers, if any, do you feel affect the way you are able to carry out your role?". Responses are shown in *Table 4.23*. (This question just asked for OH nursing managers.)

Table 4.23 Problems and barriers of OH nursing managers according to key persons in different countries.

Problems and barriers	United Kingdom	United States	Total Number
OH nursing practice	3/8	2/5	5/13
Working environment	3/8	2/5	5/13
OH and safety team	3/8	0/5	3/13
OH nurses' perceptions and beliefs	1/8	1/5	2/13
OH nursing professional issues	0/8	1/5	1/13
Number of key persons	8	5	13

As can be seen from *Table 4.23*; the most common general problems and barriers are the areas that focus on OH nursing practice (5/13) and the working environment (5/13). Comparing the two national groups, 3 of the 8 UK key persons tended to focus on OH nursing practice, OH and safety team, and working environment; while 2 of the 5 US key persons focused on OH nursing practice and working environment in order to achieve a more independent and advanced nursing practice.

4.9 4 Relationships with team members for occupational health nursing managers

Respondent were asked: "Within your occupational health team, with which team members do you have the most contact?", and "How would you describe the relationship between yourself and the person(s) you have identified above". Responses are shown in *Table 4.24*. (This question just asked for OH nursing managers.)

Table 4.24 Relationships with team members of OH nursing manager.

Relationship with team member	Poor	Professional	Good	Excellent	Total number
	Percent	Percent	Percent	Percent	
United Kingdom					
Medical officers	-	-	4/8	3/8	**7/8**
Nursing colleagues	-	-	5/8	1/8	**6/8**
Medical centre attendants	-	-	1/8	2/8	**3/8**
Industrial hygienists	-	-	1/8	2/8	**3/8**
Administrative staff	-	1/8	-	1/8	**2/8**
Safety officers	-	-	1/8	-	**1/8**
Manager	-	-	-	-	-
United Stated					
Nursing colleagues	-	-	2/5	2/5	**4/5**
Industrial hygienists	-	-	1/5	2/5	**3/5**
Medical officers	2/5	-	-	-	**2/5**
Manager	1/5	-	1/5	-	**2/5**
Safety officers	-	-	-	1/5	**1/5**
Administrative staff	-	-	1/5	-	**1/5**
Medical centre attendants	-	-	-	-	-

As can be seen from *Table 4.24*; comparing the two national groups, in the UK the two main contact team members were found to be "medical officers" (7/8), and "nursing colleagues" (6/8), and in the US the two main contact team members were found to be "nursing colleagues" (4/5), and "industrial hygienists" (3/5). Comparing the two national groups, all of the UK key persons described the positive relationships with team members as "excellent", "good" and "professional"; almost all of the US key persons described the positive relationships with team members as being "excellent", "good" and "professional", but 3 of the 5 key person described poor relationships with the "medical officers" (2/5) and "manager" (1/5). All of the key persons described relationships with more than one team member.

Results from this research suggested that differences might exist between the UK and the US in terms of the types of relationships OH nurse managers have with their working colleagues. For

example, it was found that of the OH nurse managers (key persons) in the UK, who completed the survey questionnaire, all except one rated their relationships with others (medical officers, nursing colleagues, medical centre attendant, industrial hygienists, safety officers, administrative staff) as either good or excellent. The exception was related to administrative staff, where one respondent rated the relationship to be a "professional" one. In contrast, 3 of the 5 key person respondents from the US rated relationships as poor, two referring to medical officers and one referring to the manager. The rest were rated across the good and excellent categories, similar to the UK respondents.

Regarding OH nurses' working relationships in the UK, results suggested that the most positive responses were directed towards other nurses and medical centre attendants who had been categorised as co-operative and professional. Managers and safety officers were, however, mostly rated as having poor or business-like relationships with OH nurses. Despite the indication that the most frequently contacted OH and safety team member was the medical officer, it was surprising that the relationship depicted between them was not more positive. However, not surprisingly given the relative isolation attached to OH nursing, other nursing colleagues were rated as those most frequently contacted following the medical officers.

Chapter 5. Results of the Occupational Health Nurses' Survey

5.1 Introduction

This survey was undertaken in order to collect data concerning the roles and functions of OH nurses, and to identify influencing factors. The OH nurses' survey was based on responses from subjects who were active members of the RCN-SOHN in the UK.

Data collection for the main study commenced in early November 1991 and was completed early in 1992. Using a postal questionnaire, data was collected on current OH nursing practice in the workplace, factors believed to influence the nurses' practice, and their needs for future preparation and education. A total of 346 questionnaires (Appendix B3.) were sent out with 251 replies being received (giving a response rate of 72.5%). Findings presented in this chapter are based on the responses from the 244 completed questionnaires.

5.2 Occupational health nursing practice

5.2.1 Actual roles of occupational health nurses

Respondents were asked: "Which of the following actual roles do you consider to be most important in occupational health nursing? Indicate your choice of the five most important roles by ticking the appropriate box(es)". The distribution of responses is given in *Table 5.1*.

Table 5.1 Distribution of the actual roles of OH nurses.

Actual role	Number	Percent
Health screening role	211	87.6
Health surveillance role	188	78.0
Emergency responsibility role	171	71.0
Education role	159	66.0
Therapeutic role	109	45 2
Training role	98	40.7
Environmental surveillance role	96	39 8
Consultant / Advisor role	76	31.5
Management role	51	21 2
Research role	10	4 1
Total number	241	100 0

As can be seen from *Table 5.1*; the five most important actual roles were found to be a "health screening role" (87.6%), "health surveillance role" (78.0%), "emergency responsibility role" (71.0%), "education role" (66.0%), and "therapeutic role" (45.2%).

5.2.2 The actual functions of occupational health nurses

Respondents were asked: "Which of the following actual functions do you consider to be most important in occupational health nursing? Indicate your choice of the ten most important functions by ticking the appropriate box(es)". The distribution of responses is given in *Table 5.2*.

Table 5.2 Distribution of the actual functions of OH nurses.

Actual function	Number	Percent
Emergency treatment for accident and illness	181	74.5
Individual counselling	177	72 8
Health screening	174	71.6
Record keeping	173	71 2
Health education and promotion	171	70 4
Health supervision of workers	148	60.9
Development and maintenance of records	146	60.1
Provision of a routine treatment service	142	58.4
Meetings and communication	126	51.9
Familiarisation with the work environment	130	53.5
Specific health surveillance	121	49.8
First-aid training for workers	121	49.8
Undertaking general health surveillance	113	46.5
Rehabilitation and resettlement	101	41.6
Immunisation	86	35.4
Informing workers of health hazards	83	34.2
Co-operation with outside agencies	68	28 0
Occupational safety	46	18.9
Assisting workers with psycho-social problems	40	16.5
Assessment of the nature and degree of exposure	30	12 3
Total Number	243	100 0

As can be seen from *Table 5.2*; the ten most important actual functions in general were found to be "emergency treatment for accident and illness" (74.5%), "individual counselling" (72.8%), "health screening" (71.6%), "record keeping" (71.2%), "health education and promotion" (70.4%), "health supervision of workers" (60.9%), "development and maintenance of records" (60.1%), "provision of a routine treatment service" (58.4%), "familiarisation with work environment" (53.5%), and "meetings and communication" (51.9%).

5.3 Personal factors

Table 5.3 illustrate general characteristics (e g. gender, age, marital status) concerning the OH nurses. *Table 5.4* and *Table 5.5* show the current posts of OH nurses. The motivation for choosing a job in the OH nursing field for OH nurses is presented in *Table 5.6* and *Table 5.7*, while *Table 5.8* describes the job satisfaction of OH nurses.

5.3.1 General characteristics of occupational health nurses

The distribution of the general characteristics of OH nurses is given in *Table 5.3*.

Table 5.3 Comparison of the general characteristics of the OH nurses with Dorward's study.

General characteristics		This study (%)	Dorward, 1988 (%)
Sex			
	Female	93.4	93.3
	Male	6.6	6.7
Age			
	25 - 34	18.5	12.6
	35 - 44	29 2	33.7
	45 - 54	35.0	40.7
	≥ 55	17.3	13.0
Marital status			
	Married	68 6	69.3
	Single	16.2	15.9
	Widowed/Divorced/Separated	15 2	14.8

As can be seen from *Table 5.3*; most of the respondents were female (93.4%); the majority were married (68.6%) with 16.2% being in a stable partnership or being single and with 15.3% widowed, divorced or separated. There were four age levels in the sample, with more than half (52.3%) of the respondents being aged over 45 years old. The distribution of gender, age and marital status is similar to that of the research by Dorward (1988).

5.3.2 The current posts of the occupational health nurses

The distribution of the current job of the OH nurses is given in *Table 5.4*.

Table 5.4 Description of the current job of OH nurses.

Current position	Number	Percent
Level of post		
Chief/Manager	29	12.0
Advisor	46	19.0
Senior nurse	119	49.2
Staff nurse	34	14.0
Others	14	5.8
Duty pattern		
Days only	206	84 4
Days usually	17	7.0
Shifts	17	7.0
Others	4	1.6
Working hours per week (hours)		
< 35	48	20.0
35 - 39	150	62.5
≥ 40	42	17.5
Mean (SD)[a]	35.7	(7.3)
Income per year (pounds)		
< 10,000	26	10.7
10,000 - 12,999	42	17.4
13,000 - 15,999	66	27.3
16,000 - 19,999	69	28.5
≥ 20,000	39	16 1
Time spent in this post (years)		
< 2	47	19 3
2 - 3	62	25.4
4 - 7	65	26.6
≥ 8	70	28.7
Mean (SD)[a]	5 8	(5 0)

[a] Standard deviation.

As can be seen from *Table 5.4*; nearly half the sample had a current post of senior nurse, the rest being in the role of advisor, chief nurse or manager, or staff nurse. The most commonly found duty pattern in the sample was days only (84.4%), the rest being days usually, and shifts. The most commonly found working hours in the sample were 35-39 hours (62.5%), and the average working hours in the current job was 35.7 hours. Over half the sample were paid in the range 13,000-19,999 perineum. The most commonly found time spent in the current post was 8 years and more (28.7%). Over half the sample had worked in the current post for 4 years and more and the average time spent in the current post was 5.8 years.

Furthermore, with regard to other general characteristics, such as duty patterns and working hours per week, similarities were also found between this study and the one conducted by Dorward (1988). These similarities are illustrated below in *Table 5.5.*

Table 5.5 Comparison of current post with Dorward's study.

Current post	This study (%)	Dorward, 1988 (%)
Pattern of work		
Day duty	85.1	92.6
Shift work	14.9	7 4
Working hours		
< 40 hours	82.5	81.5
≥ 40 hours	17.5	18 5

In general, the duty pattern appears to be relatively fixed, in that 85.1% of OH nurses work day shifts while the remainder work various shift patterns during the day. It is probable that OH nursing appeals to OH nurse's primarily because there is often the opportunity to work regular hours. Indeed, 32.9% indicated that one of their reasons for choosing OH nursing was "to ensure day time work only with no shift work necessary" and 23.4% indicated that this was one of the reasons why they continued in OH nursing. Also, job satisfaction appeared to be related to both the pattern of work and the number of working hours per week: where 94.9% of OH nurses were satisfied with their working pattern and 92.3% were satisfied with the number of hours worked. Regarding annual salary, 28.5% of OH nurses earn less than £13,000, 27.2% earn between £13,000 and £15,999, 28% earn between £16,000 and £19,000 and 16.3% earn greater than £20,000. Regarding aspects of job satisfaction, salary was rated lower than most of the other 17 aspects, for example, more nurses rated the job components of relationships (ranged from 98.2% to 88.2%) and working hours (94.9% to 92.3%) as substantially higher than those of salary (73.2%). (*Table 5.8*). 73.2% of nurses indicated that they were satisfied with their salary while 26.8% of nurses indicated dissatisfaction with their salary.

5.3.3 Reasons for choosing a post in occupational health nursing

Respondents were asked: "Which of the following most closely describes your reasons for choosing a job in occupational health nursing?". The distribution of responses is given in *Table 5.6*.

Table 5.6 Reasons for choosing a job in the OH nursing field of OH nurses.

Reason for choosing a job[a]	Number	Percent
To develop a professional career	175	72.6
More challenge	155	64 3
Independent work	127	52.7
To ensure day time work only with no shift work necessary	79	32 8
To care for healthy people	64	26.6
To earn money for essentials, e.g. food, rent or mortgage	47	19.5
Higher salary and more annual leave entitlement	24	10.0
No other job available	8	3.3
Other reasons	68	28 2
Total number	241	100.0

[a] Choosing the three most important reasons.

As can be seen from *Table 5.6*; the three main reasons for choosing a job in the OH nursing field were found to be "to develop a professional career" (72.6%), "more challenge" (64.3%) and "independent work" (52.7%). Among the reasons for choosing a job in the OH nursing field included in "others" was: "personal problems or to care for family" (14 people), "disillusionment with the NHS" (11 people), "enjoy health education, promotion and preventative medicine" (10 people), "believe in OH" (8 people), "wanted a change role (from NHS to OH nursing)" (5 people), "by chance" (5 people), "interested in industry and associated hazards" (4 people), "most suitable job and working hours" (4 people), and "wide variety of roles" (3 people), etc. Almost the people gave reasons for choosing a job in OH nursing were positive feeling.

5.3.4 Reasons for continuing the present post in occupational health nursing

Respondents were asked: "Which of the following most closely describes your reasons for continuing the present job in occupational health nursing?". The distribution of responses is given in *Table 5.7.*

Table 5.7 Reasons for continuing the current job in OH nursing.

Reason for continuing the current job[a]	Number	Percent
Enjoyment of work	191	79 6
Continuing challenge	145	60.4
To develop a professional career	100	41 7
Independent work	81	33.8
Fixed work pattern with no shift work necessary	56	23.3
To earn money for essentials, e.g., food, rent or mortgage	50	20.8
To care for healthy people	26	10 8
High salary and more annual leave entitlement	19	7.9
Very important position in the organisation	18	7.5
Good relationships with medical officers	8	3.3
Other reasons	14	5 8
Total number	240	100 0

[a] Choosing the three most important reasons.

As can be seen from *Table 5.7*; the three main reasons for continuing the present job in the OH nursing field were found to be "enjoyment of work" (79.6%), "continuing challenge" (60.4%), and "to develop a professional career" (41.7%). Among the reasons for continuing the present job in the OH nursing field included in "others" was: "currently undergoing training/further education" (3 people), "keep a good and closer relationship with employees over a period of time" (2 people), and "cannot move because of ill-health" (2 people), etc.

5.3.5 Job satisfaction of occupational health nurses

Respondents were asked: "Please rate your job satisfaction with various aspects". The distribution of responses is given in *Table 5.8.*

Table 5.8 Job satisfaction in various aspects rated by OH nurses.

Aspect of job satisfaction	Very dissatisfied	Fairly dissatisfied	Fairly satisfied	Very satisfied	Average score
	Percent	Percent	Percent	Percent	
Roles and functions					
Your roles & functions within the department	1 3	8 4	45.3	45 0	3 3
Your roles & functions within the organisation	3.0	23.3	46.2	27.5	3.0
Facilities for direct care					
Availability of supplies/equipment	2.2	7.9	49.4	40.5	3.3
Professional development					
Feedback on your work from team members	1.6	5.2	60.2	33.0	3 2
Feedback on your work from workers	2.2	10.4	51.7	35.7	3.2
Opportunities for continuing education	7.8	20.3	42.0	29.9	2.9
Feedback on your work from managers	9.1	22.5	44.2	24.2	2 8
Information about developing a career	11.0	28.6	42.8	17.6	2.7
Relationship					
Relationship with other team members	0.0	1.8	37.6	60 6	3 6
Relationship with your department manager	3.5	8.3	37.1	51.1	3.4
Relationship with trade unions	0.6	6.3	55.2	37.9	3.3
Relationship with outside agencies	1.3	6.2	53.6	38.9	3.3
Hours					
The starting and finishing time of shifts	1.5	3.6	30.3	64.6	3 6
Working hours per week	2.6	5.1	30.8	61.5	3 5
Welfare					
Your annual leave entitlement	2.6	7.7	49.7	40.0	3.3
Canteen facilities	8 9	12.1	39.3	39.7	3 1
Your salary	9.5	17.3	48.1	25.1	2.9
Recreational facilities	19.3	23.4	34.5	22.8	2.6

As can be seen from *Table 5.8*; the top (very satisfied) three main sources of job satisfaction were found to be "the starting and finishing time of shifts" (64.6%), "working hours per week" (61.5%), and "the relationship with other team members" (60 6%) The bottom (very dissatisfied) three main job satisfactions were found to be "recreational facilities" (19.3%), "information about developing a career" (11.0%), "salary" (9.5%). These elements of job satisfaction were split into two groups: satisfied and dissatisfied in order to aid discussion. The respondents were satisfied with the relationships with team members (98.2%), trade unions (93.1%) and outside agencies (92.5%) except for the department manager. They were also satisfied with "the starting and finishing time of shifts" (94.9%) and "working hours per week" (92.3%). The respondents were dissatisfied with professional development (e.g. "information about developing a career" - 39.6%), "feedback on your work from manager" (31.6%), "opportunities for continuing education" (28.1%)) and welfare (e.g. "recreational facilities" - 42.7%, "salary" - 26.8%, and "canteen facilities" - 21.0%).

Conrad *et al.*(1985) surveyed OH nurses' job satisfaction and found that the satisfaction of these nurses appeared quite high compared to that of hospital nurses. Moreover, OH nurses scored significantly higher than hospital nurses ($p<0.01$) for compensation (pay), creativity and independence. This suggests that since OH nurses perceive creativity and independence as more satisfying, they feel more free to provide the services they believe to be important. Conrad *et al.* (1985) also stated that although there is often little opportunity for career advancement by promotion for OH nurses, they are often the only OH nurses in the department, and their pay and prestige should be improved. However, if employers are to be persuaded to raise nurses' pay it is probably necessary to educate them about the potential cost effectiveness of OH nurses in terms of improving worker productivity and decreasing absenteeism for example.

5.4 Professional background

5.4.1 Statutory qualification and other professional qualifications

Table 5.9 to *Table 5.16* illustrate professional background (e.g. statutory qualifications, OH nursing certificate or diploma, hospital nursing experience, community nursing experience, and time spent in OH nursing) concerning the OH nurses' professional education and training, and detail of their previous experience in hospitals, the community, and in occupational health.

The distribution of the professional background of OH nurses is given in *Table 5.9*. This indicates not only the basic statutory qualifications obtained in order to practice nursing but other qualifications gained as well.

Table 5.9 Description of the statutory qualification and other professional qualifications of the OH nurses.

Qualifications	Number	Percent
Statutory qualifications		
RGN	225	92.2
EN	19	7.8
Registered Midwife	55	22.5
Others	14	5.7
OH nursing certificate or diploma		
OHND	11	4.5
OHNC	145	59.7
OHNP	28	11 5
No	59	24 3
Hospital nursing experience after qualifying as a nurse		
Yes	237	97.1
No	7	2.9
Community nursing experience		
Yes	86	35.5
No	156	64 5
Time spent in OH nursing (years)		
< 5	61	25.6
5 - 9	63	26 5
10 - 14	49	20.6
≥ 15	65	27 3
Mean (SD)[a]	10.7	(7.5)

[a] Standard deviation.

As can be seen *Table 5.9*; the vast majority (92.2%) of the statutory qualification's background was that of RGN, with the rest being Registered Midwife (22.5%) and EN (7.8%). A number of respondents held more than one statutory qualification and thus the total percentage is greater than 100%. The majority (75.7%) of the respondents hold professional qualifications included OHNC (59.7%), OHPN (11.5%) and OHND (4.5%). Almost all (97.1%) of the sample had hospital nursing experience, and 36.5% of the sample had some previous experience in community nursing. Over 74% of the sample had more than 5 years experience in OH nursing, with 48% more than 10 years. The average length of experience in the OH nursing field was 10.7 years.

In this study it was found that the vast majority (92.2%) of the statutory qualifications held by respondents was that of RGN. The remainder held the EN qualification (7.8%). In comparison to the Dorward's (1988) study where 85.2% of the sample was found to hold the RGN and SEN qualification (14.8%) this study shows a seven percentage increase in the numbers holding the RGN qualification (*Table 5.10*). Furthermore, the majority (75.7%) of the respondents in this study also held other professional qualifications including the OHNC (59.7%), the OHPN (11.5%) and the OHND (4.5%). In Dorward's (1988) study only 51.1% of the sample held the OHNC professional qualification and 22.2% held the OHPN professional qualification. The increased number of nurses holding the OHNC (8.6%) and OHND (4 5%) may be due to a recent increase

in the number of education programmes offering OHNC and OHND courses. Another possible reason may due to the greater demand among employers for well qualified personnel.

Table 5.10 Comparison of statutory and professional qualifications held by nurses in Dorward's (1988) study with nurses in this study.

Qualification	Dorward (1988)	This study (1994)
RGN	85.2	92.2
EN	14.8	7.8
OHND	-	4.5
OHNC	51.1	59 7
OHPN	22.2	11.5
None	26.7	24.3

5.4.2 Short professional courses

Respondents were asked: "Are you undertaking a course at present?", and "If yes, please specify the course name and its attendance pattern?". The distribution of responses is given in *Table 5.11* and *Table 5.12.*

Table 5.11 Distribution of the current courses and attendance patterns of OH nurses.

Current course	Number	Percent
Yes	78	32.5
No	162	67 5
Total number	240	100.0
Attendance patterns		
One day per week	22	29.7
Evening course	22	29.7
Module system	18	24 3
Open University-correspondence	5	6 8
Other pattern	7	9 5
Subtotal number	74	100 0

Table 5.12 Distribution of the current courses taken by OH nurses.

Current course name	Number	Percent
Diploma in OH nursing	15	24.3
Diploma in counselling	12	19 4
Certificate in OH nursing	9	14.5
Diploma in OH	4	6.5
MSc in OH	4	6.5
OH nurse practitioner	2	3.2
Certificate in health education or health promotion	2	3.2
Conversion to RGN	2	3 2
Computing	2	3.2
Nurse tutor	1	1 6
MSc in nursing or OH nursing	1	1.6
Degree in health education	1	1.6
Certificate in OH	1	1.6
Certificate in advanced food hygiene	1	1.6
Certificate in professional management	1	1.6
Diploma in sociology	1	1 6
Bachelor in art	1	1.6
Teaching course	1	1.6
Alcohol awareness in the community	1	1 6
Subtotal number	62	100.0

As can be seen from *Table 5.11*; 78 respondents answered that were undertaking a course at present, though 4 respondents did not fill in the attendance pattern. From the 74 respondents, 33% of the sample were currently undertaking a course and the three main attendance patterns were "one day per week" (29.7%), "evening course" (29.7%), and "module system" (24.3%). 78 respondents answered that they were undertaking a course at present, but 16 respondents did not indicate the course subject. (*Table 5.12*) From 62 of the respondents, the three main current courses were "diploma in OH nursing" (24.3%), "diploma in counselling" (19.4%), and "certificate in OH nursing" (14.5%).

Respondents were asked: "Have you ever attended other short professional nursing courses?", and "If yes, please indicate the course name". The distribution of responses is given in *Table 5.13*.

Table 5.13 Distribution of short professional courses of OH nurses.

Short professional course	Number	Percent
Yes	116	50.2
No	115	49.8
Total number	231	100.0
Industrial audiometry	34	16.2
Counselling/Communication skills	26	12.4
Accident and emergency/First aid at work	11	5.2
Spirometry	11	5.2
First-aid at work instruction	9	4.3
AIDS in the workplace	8	3.8
Study day	8	3.8
Seminar	7	3.3
Smoking cessation	6	2.9
Ergonomics	5	2.4
Ophthalmology/Eye care	5	2.4
Family planning	5	2.4
Health life style	5	2.4
Stress reduction/Stress management	5	2.4
Use of computers	5	2.4
Control of Substances Hazardous to Health Regulations (COSHH)	5	2.4
Noise	4	1.9
Cervical screening	4	1.9
Management	4	1.9
Dermatology	3	1.4
General health education	3	1.4
Lifting and back care	3	1.4
General health assessment and screening	3	1.4
Presentation skills	3	1.4
Toxicology	2	1.0
Environment monitoring	2	1.0
Neurology	2	1.0
Prevention for stroke and heart disease	2	1.0
Electrocardiography	2	1.0
Techniques in teaching	2	1.0
Health and safety law	2	1.0
Other course	14	6.7
Subtotal number	210	100.0

As can be seen from *Table 5.13*; the four main short professional courses were "industrial audiometry" (16.2%), "counselling or communication skills" (12.4%), "accident and emergency or first aid at work" (5.2%), and "spirometry" (5.2%).

5.4.3 Experience in hospital

Respondents were asked: "Did you have any nursing experience (excluding training) in a hospital before your first occupational health nursing position?", and "If yes, please indicate each type of department you worked in and show how many months you spent in each area?". The distribution of responses is given in *Table 5.14*.

Table 5.14 Duration and hospital department experience of OH nurses.

Hospital experience	Number	Percent
Yes	237	97.1
No	7	2.9
Total number	244	100.0
Duration (years)		
< 2	44	20.9
2 - 4	72	34.4
5 - 9	56	26.7
≥ 10	38	18.1
Mean (SD)[a]	5.7	(4.8)
Department		
Surgery	148	62.4
Medicine	146	61.6
Accident and emergency	111	46.8
Operating theatre	58	24.5
Obstetrics	56	23.6
Gynaecology	54	22.8
Orthopaedics	55	23.2
Geriatrics	53	22.4
Intensive care	51	21.5
Out-patients department	47	19.8
Paediatrics	43	18 1
Ear, nose, & throat	38	16.0
Ophthalmology	36	15.2
Others	31	13.1
Dermatology	17	7 2
Psychiatry	17	7.2

[a] Standard deviation.

As can be seen from *Table 5.14*; over half (61%) of the sample had hospital nursing experience within the range 2-9 years. The average length of experience in the hospital setting was 5.7 years. The three main practice departments were "surgery" (62.4%), "medicine" (61.6%), and "accident and emergency" (46.8%).

5.4.4 Experience in community

Respondents were asked: "Did you have any nursing experience (excluding training) in the community before your first occupational health nursing position?", and "If yes, please indicate which areas of nursing practice you worked in and indicate how many months you spent in each area?". The distribution of responses is given in *Table 5.15*.

Table 5.15 Duration and community experience practice areas of OH nurses.

Community experience	Number	Percent
Yes	86	35 5
No	156	64 5
Total number	244	100.0
Duration (years)		
< 1	26	32.1
1 - 2	29	35.8
≥ 3	26	32.1
Mean (SD)[a]	2.9	(3.8)
Practice area		
District nursing	25	29 1
Midwifery	20	23.3
School nursing	16	18 6
General practitioner nursing	14	16.3
Health visiting	8	9.3
Community psychiatric nursing	2	2.3
Others	16	18.6

[a] Standard deviation.

As can be seen from *Table 5.15*; the majority of respondent had no community experience. There is little difference between the values of the three community experience levels stated. The average length of experience in the community was 2.9 years and the three main practice areas were "district nursing" (29.1%), "midwifery" (23.3%), and "school nursing" (18.6%). Some respondents chose more than one practice area.

5.4.5 Experience in occupational health

Respondents were asked: "Which of the following types of organisation have you had experience of working in during your occupational health nursing career ?". The distribution of responses is given in *Table 5 16.*

Table 5.16 Distribution of the previous experience in occupational settings of OH nurses.

Previous experience in occupational settings	Number	Percent
Yes	159	65.2
No	85	34 8
Total number	243	100 0
Type of organisation		
Agriculture, hunting, forestry, and fishing	1	0.6
Mining and quarrying	2	1.3
Manufacturing: Food products	33	20.8
Manufacturing: Beverages & tobacco products	4	2.5
Manufacturing: Textiles & textile products	6	3.8
Manufacturing. Wearing apparel	6	3 8
Manufacturing: Leather & leather products	1	0 6
Manufacturing: Wood & wood products	1	0 6
Manufacturing: Papers & publishing	15	9.4
Manufacturing: Chemicals	13	8.2
Manufacturing: Chemical products	21	13.2
Manufacturing: Coke, petroleum products, & nuclear fuel	10	6.3
Manufacturing: Rubber products	3	1.9
Manufacturing: Plastic products	11	6.9
Manufacturing: Basic metals	14	8.8
Manufacturing: Metal products	10	6 3
Manufacturing: Machinery & equipment	28	17.6
Manufacturing: Electrical equipment	26	16.4
Manufacturing: Transport equipment	21	13.2
Manufacturing: Precision & optical equipment	12	7.5
Manufacturing: Not specified	26	16 4
Electricity, gas, and water supply	8	5 0
Construction	7	4.4
Commerce	9	5.7
Transport, storage, and communication	3	1.9
Banking insurance estate, renting, and business activities	6	3.8
Public administration and defence	23	14 5
Educational institution	1	0.6
National health system	11	6.9
Subtotal number	159	100 0

As can be seen from *Table5.16*; 65% of the sample had previous experience in the OH setting. The four main practice industry types were "food products" (20.8%), "machinery and equipment" (17.6%), "electrical equipment" (16.4%), and "manufacturing, not specified" (16.4%).

5.5 Occupational health nurses' perceptions and beliefs

5.5.1 The ideal roles of occupational health nurses

Respondents were asked: "Which of the following ideal roles do you consider to be most important in occupational health nursing?". The distribution of responses is given in *Table 5.17*.

Table 5.17 Distribution of the ideal roles of OH nurses.

Ideal role[a]	Number	Percent
Health surveillance role	212	88 0
Education role	200	83 0
Health screening role	170	70.5
Environmental surveillance role	164	68 0
Consultant/Advisor role	96	39.8
Training role	82	34 0
Emergency responsibility role	80	33.2
Research role	68	28.2
Management role	67	27.8
Therapeutic role	46	19.1
Other ideal roles	87	36.1
Total number	241	100 0

[a] Choosing the five most important roles.

As can be seen from *Table 5.17*; the five most important ideal roles were found to be "health surveillance role" (88.0%), "education role" (83.0%), "health screening role" (70.5%), "environmental surveillance role" (68.0%), and "consultant role". Among the ideal roles included in "others" was: "counselling role" (60 people), "liaison or communication role" (18 people), and "occupational hygiene and safety role" (15 people), etc.

5.5.2 The ideal functions of occupational health nurses

Respondents were asked: "Which of the following ideal functions do you consider to be most important in occupational health nursing?". The distribution of responses is given in *Table 5.18*.

Table 5.18 Distribution of the ideal functions of OH nurses.

Ideal function[a]	Number	Percent
Health education and promotion	213	88.0
Familiarisation with the work environment	169	69.8
Individual counselling	166	68.6
Health supervision of workers	158	65.3
Rehabilitation and resettlement	155	64.0
Meetings and communication	142	58.7
Informing workers of health hazards	138	57.0
Development and maintenance of records	135	55.8
Record keeping	131	54.1
Specific health surveillance	129	53.3
Emergency treatment for accident and illness	128	52.9
First-aid training for workers	119	49.2
Health screening	113	46.7
Co-operation with outside agencies	108	44.6
Undertaking general health surveillance	105	43.4
Assessment of the nature and degree of exposure	94	38 8
Occupational safety	68	28 1
Assisting workers with psycho-social problems	43	17.8
Provision of a routine treatment service	35	14.5
Immunisation	34	14.0
Other ideal functions	37	15.3
Total Number	242	100.0

[a] Choosing the ten most important ideal functions.

As can be seen from *Table 5.18*; the ten most important ideal functions were found to be "health education and promotion" (88.0%), "familiarisation with the work environment" (69 8%), "individual counselling" (68.6%), "health supervision of workers" (65.3%), "rehabilitation and resettlement" (64.0%), "meetings and communication" (58.7%), "informing workers of health hazards" (57.0%), "development and maintenance of records" (55.8%), "record keeping" (54.1%), and "specific health surveillance" (53.5%). Among the ideal functions included in "others" was: "visiting absent workers (long term sick or injury) or sickness and absence monitoring" (10 people), "informing management of health hazards" (6 people), "management" (5 people), "research in OH" (4 people), and "policy development" (4 people), etc.

5.5.3 Definitions of occupational health nursing and the occupational health nurse

Respondents were asked: "What is your definition of occupational health nursing?". The distribution of responses is given in *Table 5.19*.

Table 5.19 Distribution of the definition of OH nursing.

Definition of OH nursing	Number	Percent
a) The application of nursing principles conserving the health of workers in all occupations. It involves prevention, recognition, and treatment of illness and injury and requires special skills and knowledge in the fields of health education and counselling, environmental health, rehabilitation, and human relations.	141	58.0
b) Contributing to the promotion of a high degree of physical and mental health and well-being of people at work, assisting with the prevention of illness and injury due to the work undertaken or the working environment, and providing immediate treatment for illness or injury arising at work.	65	26.7
c) The speciality that applies professional nursing principles in developing and carrying out a nursing service tailored to the changing environment of the specific company as well the needs of its employees.	21	8.6
d) The application of nursing practice and public health procedures for the purpose of conserving, promoting and restoring the health of individuals and groups through their places of employment.	5	2.1
Other definitions.	11	4.5
Total number	243	100.0

Respondents were given the source of main definitions. They are as follows:
a) Definition of the AAOHN.
b) Definition of the ANA.
c) Definition of the RCN.
d) Definition of the ILO.

As can be seen from *Table 5.19*; the main definition of OH nursing chosen was "the application of nursing principles conserving the health of workers in all occupations. It involves prevention, recognition, and treatment of illness and injury and requires special skills and knowledge in the fields of health education and counselling, environmental health, rehabilitation, and human relations" (58.0%).

Respondents were asked: "How would you define the occupational health nurse?". The distribution of responses is given in *Table 5.20.*

Table 5.20 Distribution of the definition of the OH nurse.

Definition of OH nurse	Number	Percent
a) The occupational health nurse perceives the worker as a total individual, treats his or her response to potential and/or existing adverse conditions, and considers the implications that this response may have on the individual's family, social, cultural and economic life.	108	46.0
b) A registered professional nurse employed by business, industry, or an organisation for the purpose of conserving, protecting, or restoring the health of workers.	58	24.7
c) A registered nurse who gives nursing service under general medical direction to ill or injured employees or other persons who become ill or suffer an accident on the premises of a factory or other establishment. Duties involve a combination of the following: giving first-aid to the ill or injured, attending to subsequent dressings of employees' injuries, keeping records of patients treated; preparing accident reports for compensation or evaluations of applicants and employees; and planning and carrying out programs involving health education, accident prevention, evaluation of plant environment, or other activities affecting the health, welfare, and safety of all personnel.	52	22.1
Other definitions.	17	7.2
Total number	235	100.0

Statement source from:
a) Definition of the ICOH-NC.
b) Definition of the AAOHN.
c) Definition of the USDL.

As can be seen from *Table 5.20*; the main definition of OH nurse chosen was "the OH nurse perceives the workers as a total individual, treats his or her response to potential and/or existing adverse conditions, and considers the implications that this response may have on the individual's family, social, cultural and economic life" (46.0%).

5.5.4 Ideal characteristics of the occupational health nurse

Respondents were asked: "Which of the following characteristics do you believe the effective occupational health nurse should possess?". The distribution of responses is given in *Table 5.21.*

Table 5.21 Distribution of the characteristics of OH nurses.

Characteristics of an effective OH nurse[a]	Number	Percent
Good communication skills	181	74.2
Well developed, effective inter-personal skills	151	61.9
An enquiring and challenging mind	101	41.4
A sense of humour	87	35.7
Independence	86	35.2
Good basic nursing skills	84	34 4
Good management skills	82	33 6
Empathy	75	30.7
Efficiency	70	28.7
Good skills in written and oral presentation	68	27.9
Taking on problems and solving them	67	27.5
Maturity	61	25 0
Intelligence	51	20.9
Inquisitiveness and inventiveness	46	18 9
Other characteristics	3	1 2
Total number	244	100.0

[a] Choosing the five most important characteristics.

The specific ideal characteristics of the OH nurse have been identified in this study, in order of priority as: "good communication skills" (74.2%), "well developed, effective inter-personal skills" (61.9%), and "an enquiring and challenging mind" (41.4%). (*Table 5.21*)

5.5.5 Differences between occupational health nursing and generic nursing

Respondents were asked: "Do you think that occupational health nursing is a specialty which differs from generic nursing?", and "If yes, what elements contribute to this difference?". The distribution of responses is given in *Table 5.22.*

Table 5.22 Distribution of the differences between OH nursing and generic nursing

OH nursing is a specialty	Number	Percent
Yes	240	98 8
No	3	1.2
Total number	243	100 0
Elements contributing to the difference		
Working with healthy people	197	82 1
Working in the employees' workplace	190	79.2
Preventing diseases and injuries	177	73 8
A preventative and health promoting specialty	174	72 5
Part of a more multi-disciplinary team	170	70.8
Relative isolation from the main stream of nursing & other health professionals	147	61 3
Not within the scope of nursing as it is usually understood by the public	142	59.2
Other elements	84	35 0
Subtotal number	240	100 0

As can be seen from *Table 5.22*; 99% of OH nurses indicated that there was a difference between OH nursing and generic nursing. The findings of this study have highlighted a number of elements that contribute to the speciality of OH nursing as distinct from generic nursing. In order of priority these are: "working with healthy people" (82.1%), "working in the employees' workplace" (79.2%), "preventing disease and injury" (73.8%), "a preventative and health promoting specialty" (72.5%), and "being part of a more multi-disciplinary team" (70.8%). Among the differences between OH nursing and generic nursing included in "others" was: "OH nurses tend to be individual practitioners or work alone or do more independent work" (32 people), "close relationship with employees due to many years contact" (12 people), "the recognition and prevention of ill health due to potentially adverse factors within the workplace" (10 people), "involves a wide knowledge on the part of the OH nurse concerning many different industries" (10 people), "excellent communication skills" (10 people), "more responsibility" (9 people), "acting independently of a doctor" (7 people), "in industry, top priority is production" (6 people), "more management skills" (6 people), "keep up to date with legislation" (6 people), "ability to make decisions" (5 people), and "it is concerned with the needs of the employing business" (4 people), etc.

5.5.6 Unique features of occupational health nursing

Respondents were asked: "Which of the following do you feel are unique qualities of occupational health nursing?" The distribution of responses is given in *Table 5.23.*

Table 5.23 Distribution of the unique qualities of OH nursing.

Unique qualities of OH nursing[a]	Number	Percent
Preventing ill health and injury in the workplace	195	79.9
Promoting health in the workplace and community	171	70.1
Providing health surveillance and maintenance of health	156	63.9
Improving working conditions	143	58.6
Possessing a wide and varied knowledge base	117	48.0
Having the opportunity to establish a long term relationship with a population and providing continuity of care	117	48.0
Having the ability to directly influence decision makers	113	46.3
Providing health care in an environment dedicated to production & profit	107	43.9
Involving a diversity of problems and challenges	92	37.7
Other qualities	57	23.4
Total number	244	100 0

[a] Choosing the five most important qualities.

The following features are those which have been identified by the respondents of this study as the unique aspects of OH nursing in order of distribution: "preventing ill health and injury in the workplace" (79.9%), "promoting health in the workplace and community" (70.1%), "providing health surveillance and maintenance of health" (63.9%), and "improving working conditions" (58.6%). (*Table 5.23*) Among the unique qualities of OH nursing included in "others" was: "more independent work" (14 people), "relationship with both management and employee" (10 people), "unique relationship with workers - viewed as colleague/client, rather than patient" (9 people), and "arbitrator between unions and management" (4 people), etc.

The study of Conrad *et al.* (1985) identified important differences between OH nurses' and hospital nurses' satisfaction. Compensation (pay), creativity and independence were found to be particularly important qualities related to OH nursing, in contrast to hospital nursing. This significant difference may reflect some of the unique qualities of the OH nurses' job, not identified above.

5.6 Working environment

5.6.1 Type of business and number of employees

OH nurses were asked which of the following type of organisation they were presently involved in and "Approximately how many employees is your occupational health department responsible for?". The distribution of responses is given in *Table 5.24.*

Table 5.24 Distribution of the type of organisation presently involved in and number of employees.

Where OH nurses work	Number	Percent
Type of organisation		
Agriculture, hunting, forestry & fishing	-	-
Mining and quarrying	1	0.4
Manufacturing: Food products	27	11.1
Manufacturing: Beverages & tobacco products	5	2.0
Manufacturing: Textiles & textile products	-	-
Manufacturing: Wearing apparel	1	0.4
Manufacturing: Leather & leather products	-	-
Manufacturing: Wood & wood products	-	-
Manufacturing: Papers & publishing	5	2 0
Manufacturing: Chemicals	4	1.6
Manufacturing: Chemical products	29	11.9
Manufacturing: Coke, petroleum products, nuclear fuel	9	3.7
Manufacturing: Rubber products	-	-
Manufacturing: Plastic products	2	0.8
Manufacturing: Non-metallic mineral products	2	0.8
Manufacturing: Basic metals	3	1.2
Manufacturing: Metal products	5	2.0
Manufacturing: Machinery & equipment	19	7 8
Manufacturing: Electrical equipment	18	7.4
Manufacturing: Transport equipment	2	0.8
Manufacturing: Precision & optical equipment	-	-
Manufacturing: Not specified	29	11.9
Electricity, gas & water supply	14	5.7
Construction	4	1.6
Commerce	9	3.7
Transport, storage & communication	7	2.9
Banking, insurance, estate, renting, business activities	9	3.7
Public administration & defense	18	7 4
Educational institution	3	1.2
National health system	15	6.1
Group OH services	4	1 6
Number of employees		
< 300	13	5 9
300 - 999	79	36 1
1,000 - 4,999	83	37.9
≥ 5,000	44	20.1
Total number	244	100 0

As can be seen from *Table 5.24*; the three main business types were "chemical products" (11.9%), "manufacturing not specified" (11.9%), and "food industry" (11.1%). Over half (58%) of the sample said they worked in companies employing over 1,000.

5.6.2 The importance of the occupational health department

Respondents were asked: "What importance do you feel is attached to your department by the organisation?". The distribution of responses is given in *Table 5.25*.

Table 5.25 Distribution of the importance of the OH department according to employer.

Importance of the OH department	Number	Percent
Essential but not the highest priority	177	74.7
Low priority and not very essential	33	13.9
Totally essential	26	11.0
Not essential	1	0.4
Total number	237	100.0

As can be seen from *Table 5.25*; the importance of the OH department was most commonly seen to be essential but not the highest priority (74.7%). Only 11% of respondents thought that the OH department was totally essential. Interestingly, there are differences between these findings and those of an American study. Levinsohn (1984) investigated how OH nurses perceived the importance of OH services, and found that: 45% believed OH services were moderately important to their employers, while 37.4% believed their services were highly important. Therefore, a higher proportion of nurses in America (26.4%) appear to value their contribution more than do nurses in the UK.

5 6.3 The occupational health policy

Respondents were asked: "Do you have an occupational health policy in your organisation?", and "What components are included in the occupational health policy for your organisation?". The distribution of responses is given in *Table 5.26*.

Table 5.26 Distribution of the OH policy.

OH policy	Number	Percent
Yes	159	67.7
No	76	32.3
Total number	235	100 0
Component		
Administration procedures	132	83.0
Job descriptions	117	73.6
Protocols appropriate to cover emergency situations	105	66.0
Personnel policies	95	59.7
Ethical/legal aspects of practice	84	52.8
Health and environment relationships	85	53.5
Philosophy/Mission statement	88	55.3
Organisational chart / Company description	83	52.2
Goals and specific measurable objectives	81	50 9
Scope of health services organisation, staffing, and program	75	47.2
Interrelationships with community	58	36.5
Other components	6	3.8
Subtotal number	159	100.0

As can be seen from *Table 5.26*; 67% of the OH nurses indicated that they had an OH policy. The four main components of OH policies were found to be "administration procedures" (83.0%), "job descriptions" (73.6%), "protocols appropriate to cover emergency situations" (66.0%), and "personnel policies" (59.7%).

5 6 4 The occupational health nursing policy

Respondents were asked: "Is there a policy for nurses employed in your organisation?", and "Which of the following components are included in the policies for nurses employed in your organisation?". The distribution of responses is given in *Table 5.27*.

Table 5.27 Distribution of the OH nursing policy.

Policy for nurses employed	Number	Percent
Yes	142	58.2
No	102	41.8
Total number	244	100 0
Component		
Written job descriptions for each level of staff	127	89.4
Written professional and para-professional staff requirements including functions, credentials and skills	96	67.6
Budgets for the nursing component as well as the overall OH program	78	54.9
Written policies regarding staff meetings, staff and professional development opportunities, access to and use of consultants, and mechanisms for personal evaluations	44	31.0
Clearly delineated staffing patterns	40	28.2
Other components	7	4 9
Subtotal number	142	100.0

As can be seen from *Table 5.27*; 58% of the OH nurses indicated that they had an OH nursing policy. The three main OH nursing policy components were found to be "written job descriptions for each level of staff" (89.4%), "written professional and para-professional staff requirements including functions, credentials and skills" (67.6%), and "budgets for the nursing component as well as the overall OH program" (54.9%).

5.6.5 Equipment and facilities used in the occupational health department

Respondents were asked: "What equipment and facilities are there in your department?". The distribution of responses is given in *Table 5.28.*

Table 5.28 Distribution of the equipment and facilities used in OH departments.

Equipment and facilities	Number	Percent
Office(s) for nurse(s)	217	93.9
Toilet/Shower	202	87.4
Equipment and facilities for vision test	198	85 7
Waiting room	194	84.0
Separate treatment room(s)	180	77 9
Rest area with bed	177	76.6
Office(s) for doctor(s)	176	76.2
Storage room	145	62.8
Equipment and facilities for audiometric test	141	61.0
Private area for health education	132	57.1
Library space (current references, journals, literature)	118	51.1
Staff changing room	86	37.4
Conference area	41	17.7
Physiotherapy room	32	13.9
Equipment and facilities for stress test	23	10.0
Laboratory room	19	8.2
Equipment and facilities for X-ray radiography	14	6.1
Other equipment and facilities	51	22.1
Total number	231	100.0

As can be seen from *Table 5.28*; the ten most popular equipment and facilities used in OH departments were found to be "office(s) for nurse(s)" (93.9%), "toilet and shower" (87.4%), "equipment and facilities for vision test" (85.7%), "waiting room" (84.0%), "separate treatment room" (77.9%), "rest area with bed" (76.6%), "office(s) for doctor(s)" (76.2%), "storage room" (62.8%), "equipment and facilities for audiometric test" (61.0%), and "a private area for health education" (57.1%). Among the equipment and facilities used in OH departments included in "others" was: "equipment and facilities for lung function test" (15 people), "ECG" (8 people), "computing equipment" (5 people), "first-aid room" (5 people), "secretary's office" (4 people), and "blood test machine" (3 people), etc.

5.7 Occupational health and safety team

5.7.1 Professional relationships within the occupational health department

Respondents were asked: "Which of the following words best describes professional relationships within your department?". The distribution of responses is given in *Table 5.29*.

Table 5.29 Distribution of the professional relationships within OH departments.

Professional relationship within OH department	Number	Percent
Co-operative	97	41 8
Professional	81	34 9
Reasonable	20	8.6
Organised	12	5.2
Business-like	5	2.2
Patchy	10	4.3
Unprofessional	2	0 9
Disorganised	2	0.9
Other descriptions	3	1.3
Total number	232	100.0

As can be seen from *Table 5.29*; the two most commonly found main professional relationships within OH departments were to be "co-operative" (41.8%), and "professional" (34.9%). 4 (1.8%) respondents described their relationship as unprofessional or disorganised.

5.7.2 The occupational health team members

Respondents were asked: "Within your occupational health team, with which members do you have the most contact?". The distribution of responses is given in *Table 5.30*.

Table 5.30 Distribution of the OH and safety team members who are most frequently contacted by OH nurses.

Most frequently contacted team member[a]	Number	Percent
Medical officers	199	84.7
Nursing colleagues	141	60 0
Safety officers	116	49 4
Managers	104	44 3
Medical centre attendants	30	12 8
Industrial hygienists	20	8 5
Other members	42	17.9
Total number	235	100.0

[a] Choosing the three most frequently contacted team members.

As can be seen from *Table 5.30*; the four OH and safety team members who are most commonly contacted by OH nurses were found to be "medical officers" (84.7%), "nursing colleagues" (60.0%), "safety officers" (49.4%), and "managers" (44.3%). Among the OH and safety team members who are most frequently contacted by OH nurses included in "others" was : "secretary" (16 people), "physiotherapist" (7 people), "administration staff" (6 people), "first-aider" (5 people), and "medical programme coordinator" (5 people), etc.

5.7.3 Relationships with team members

Respondents were asked: "Which of the following words best describes professional relationships within your department?" The distribution of responses is given in *Table 5.31*. Scores of between 1 and 4 were assigned to the various relationships with team members, with the higher the score, the greater the positive relationship of the respondents.

Table 5.31 Distribution of the relationships with team members.

Relationship with team member	Poor	Business -like	Professional	Cooperative	Average score
	Percent	Percent	Percent	Percent	
Nursing colleagues	0.7	0.0	29 2	70.1	3.7
Medical centre attendants	0.0	6.7	26 7	66.7	3 6
Medical officers	3.6	0.5	41.3	54.6	3.5
Industrial hygienists	0.0	5.0	40.0	55.0	3 5
Safety officers	5.4	8.0	21.4	65.2	3.5
Managers	6.0	19.0	19.0	56.0	3 3

As can be seen from *Table 5.31*; the best relationships with team members were enjoyed with "nursing colleagues" (99.3% professional or co-operation), and "medical centre attendants" (93.4% professional or co-operation). The poor relationships with the team members were with the "manager" (6.0%), and "safety officers" (5.4%).

5.8 Changes and influencing factors for occupational health nursing

5.8.1 Current changes in occupational health nursing

Respondents were asked: "In your opinion, is occupational health nursing changing at present?", and "In what way is it changing?". The distribution of responses is given in *Table 5.32.*

Table 5.32 Distribution of the sources of change in OH nursing.

Change	Number	Percent
Yes	237	97.5
No	6	2.5
Total number	243	100.0
Source of change		
The trend toward prevention and early detection instead of treatment of injury and primary care	166	70.0
Changes in OH nursing education	119	50.2
Changes in consumers' understanding and requirements of OH nursing	111	46 8
Economic/Financial change	90	38.0
Developing as a specialty	87	36.7
Increasing role	73	30.8
Political/Social change	57	24.1
Other changes	58	24.5
Subtotal number	237	100.0

As can be seen from *Table 5.32*; 98% of the sample indicated that there were changes in the field of OH nursing. The four main sources of change were found to be "the trend toward prevention and early detection instead of treatment of injury and primary care (70.0%), changes in OH nursing education" (50.2%), "changes in consumers understanding and requirements of OH nursing" (46.8%), and "economic and financial change" (40.0%). Among the sources of change included in "others" was: "new legislation to conform to EEC/COHSS (26 people), "changing in its perceived need by raising its profile" (5 people), "greater awareness of health education by employees" (4 people), "cost efficiency/effectiveness" (4 people), "OH nurses becoming less practical and more theoretical" (3 people), and "younger nurses interested in OH nursing" (3 people), etc.

5.8.2 Factors influencing change

Respondents were asked: "Which factors are currently influencing these changes?". The distribution of responses is given in *Table 5.33*.

Table 5.33 Distribution of the influencing factors in OH nursing.

Influencing factors	Number	Percent
Better awareness of health and environment	225	94.1
EEC/UK legislation	224	93.7
Cost effectiveness of disease prevention and early detection	212	88 7
Economic/Financial situation	198	82.8
Working processes/Technology changes	197	82.4
Developments in industry	187	78.2
OH nursing education/certification	179	74.9
Cost-benefit analyses	152	63.6
Politics/Social policy	129	54.0
Computerisation	124	51.9
Health care delivery system	122	51.0
Ecology change	116	48.5
Developing roles of other nursing practitioners	109	45.6
Interdisciplinary competition	63	26.4
Other influencing factors	16	6.7
Total number	239	100.0

As can be seen from *Table 5.33*; the eight main influencing factors were found to be "better awareness of health and environment" (94.1%), "EEC or UK legislation" (93.7%), "cost effectiveness of disease prevention and early detection" (88.7%), "economic and financial situation" (82.8%), "working processes and technology changes" (82.4%), "developments in industry" (78.2%), "OH nursing education and certification" (74.9%), and "cost-benefit analyses" (63.6%). Among the influencing factors included in "others" was: "raising profile of OH nurses" (5 people), and "higher education" (5 people), etc.

5.8 3 Main issues and problems in occupational health nursing

Respondents were asked: "Which main issues and problems is occupational health nursing facing at present?". The distribution of responses is given in *Table 5.34*.

Table 5.34 Distribution of the main issues and problems of OH nurses.

Main issues and problems	Number	Percent
Economic recession causing cutbacks in staff and training	162	66 7
Lack of understanding of our professional and unique role in the multidisciplinary team from manager and others	143	58 8
Lack of knowledge of what OH nursing can provide in protecting the health and safety of worker	135	55 6
Lack of legislation supporting the promotion of OH in the workplace	133	54 7
Lack of understanding of roles by colleagues and managers	75	30 9
Poor communication	38	15 6
Lack of recognized qualifications	26	10.7
Lack of team work and lack of acceptance of each other's abilities	11	4 5
Other main issues and problems	31	12 8
Total number	243	100.0

As can be seen from *Table 5.34*; the four main issues and problems were found to be the "economic recession causing cutbacks in staff and training" (66.7%), "lack of understanding of our professional and unique role in the multidisciplinary team from manager and others" (58.8%), "lack of knowledge of what OH nursing can provide in protecting the health and safety of worker" (55.6%), and "lack of legislation supporting the promotion of OH in the workplace" (54.7%). Among the main issues and problems included in "others" was: "inadequate support/representation from the RCN" (4 people), "lack of higher qualified OH nurses" (4 people), "keeping up to date with the laws and legislations" (3 people), "OH nursing has a low profile" (3 people), and "apathy on part of OH nurses" (3 people), etc.

5.8.4 Problems and barriers of occupational health nurses

Respondents were asked: "What problems and/or barriers, if any, do you feel affect the way you are able to carry out your role?". The distribution of responses is given in *Table 5.35*.

Table 5.35 Distribution of the problems or barriers of OH nurses.

Main issues and problems	Number	Percent
Lack of understanding of OH in general	105	46.2
Time constraints	100	44.1
Misunderstanding by employers	18	7.9
Misunderstanding by employees	4	1.8
Other problems and barriers	68	30.0
Total number	227	100.0

As can be seen from *Table 5.35*; the two main problems and barriers were found to be "lack of understanding of OH in general" (46.2%), "time constraints" (44.1%). Among the problems or barriers included in "others" was: "lack of support facilities (e.g. computerisation, secretarial assistance, human resources) and staff" (15 people), "lack of money" (14 people), "misunderstanding by managers" (9 people), "employees geographically spread out" (7 people), and "lack of management support" (7 people), etc.

5.8 5 Relationships with community colleagues

Respondents were asked: "What relationship, if any, exists between your role as an occupational health nurse and that of your colleagues in the community?". The distribution of responses is given in *Table 5.36*.

Table 5.36 Distribution of the relationship between community health nursing and OH nursing.

Relationship with the role of community health nurses	Number	Percent
None	19	11.7
Very little	45	27.8
Some contact	29	17.9
Quite strong	38	23.5
Very strong	30	18 5
Total number	162	100 0

As can be seen from *Table 5.36*; the number of negative relationships perceived (none, very little) (39.5%) was similar to that of positive relationships (quite strong, very strong) (42.0%).

5.9 Occupational health nurses' future professional development

5.9.1 Future concerns for occupational health nursing

Respondents were asked: "What else do you feel the future holds for occupational health nursing?". The distribution of responses is given in *Table 5.37*.

Table 5.37 Distribution of the future concerns for OH nursing.

Future concerns for OH nursing	Number	Percent
A constant challenge	57	23 5
A need to be realistic - the world of the OH nurse is far from safe and secure	80	32.9
A recognition that OH nurses are good value and an increased use of their skills in industry and commerce	85	35.0
An increase in the standard of preparation and training received by OH nurses	11	4.5
A positive and successful future	10	4 1
Other future concerns	48	19 8
Total number	243	100 0

As can be seen from *Table 5.37*; the two main future concerns identified were "the need for recognition that OH nurses are good value and for an increased use of their skills in industry and commerce" (35.0%), and "the need to be realistic - the world of the OH nurse is far from safe and secure" (32.9%). Among the future concerns for OH nursing included in "others" was: "European Economic Community legislation can give OH nursing a higher profile" (7 people), "the recession is having a negative effect on OH nursing" (6 people), "need to promote a professional image" (6 people), "have to prove OH nurses' worth to management" (4 people), "new legislation to make OH nursing compulsory in some factories" (4 people), and "more preventive role than treatment role" (3 people), etc.

5.9.2 Further academical professional qualifications of occupational health nurses

Respondents were asked: "Would you be interested in obtaining any further academical professional qualifications?", and "If yes, which ones would you like to obtain?". The distribution of responses is given in *Table 5.38*.

Table 5.38. Distribution of the further academical professional qualification of OH nurses.

Future professional qualification	Number	Percent
Yes	151	66 2
No	77	33.8
Total number	228	100.0
Diploma in OH nursing	34	20.4
BSc in nursing or OH nursing	27	16.2
Diploma in OH	26	15.5
Certificate in OH nursing	14	8.4
Diploma in counselling	10	6.0
Certificate in health education or health promotion	7	4.2
Nurse tutor	6	3 6
Conversion to RGN	6	3.6
MSc in nursing or OH nursing	5	3.0
MSc in OH	5	3.0
Certificate in OH	4	2.4
Diploma in safety	4	2.4
Diploma in management	4	2.4
PhD in nursing	3	1.8
Certificate in professional management	3	1.8
Health visiting	2	1.2
PhD in OH	2	1.2
MBA	2	1.2
First-aid at work instruction certificate	2	1 2
Higher National Certificate	1	0 6
OH nurse practitioner	1	0 6
Degree in health education	1	0.6
BSc in education	1	0.6
Diploma in health education	1	0.6
BSc in OH	1	0.6
MSc in psychology	1	0.6
Practice nurse course (ENB)	1	0.6
Stress management	1	0.6
RSA (certificate) in counselling	1	0.6
Higher teaching certificate	1	0 6
Subtotal number	167	100.0

As can be seen from *Table 5.38*; the five main future professional qualifications were "diploma in OH nursing" (20.4%), "BSc in nursing or OH nursing" (16.2%), "diploma in OH" (15.5%), "certificate in OH nursing" (8.4%), and "diploma in counselling" (6.0%).

5.9.3 Future career plans of occupational health nurses

Respondents were asked: "Where do you see yourself professionally in the next five and ten years?". The distribution of responses is given in *Table 5.39*.

Table 5.39. Distribution of the future plans in the next five and ten years of OH nurses.

Future plan	Five years		Ten years	
	Number	Percent	Number	Percent
Higher position	33	13.4	21	13.3
Consultant in OH management	6	2 4	14	8.9
Become a manager	16	6.5	8	5.1
Higher education	38	15.5	7	4.4
Become a lecturer	2	0 8	7	4 4
Be a full-time OH nurse in industry	1	0.4	2	1.3
Improving OH service offered to company and employee	8	3.3	1	0 6
Setting up own consultation service	4	1.6	1	0.6
Gain experience in health education, health promotion and counselling	3	1.2	-	-
Research	1	0 4	-	-
Writing a book	1	0 4	-	-
Retired	31	12.6	47	29.8
Don't know	13	5.3	18	11.4
The same situation	68	27.7	17	10.8
Semi-retirement	3	1.2	3	1.9
The same situation but less hours	3	1.2	-	-
Change a job	13	5.3	10	6.3
Working in the community	1	0.4	1	0 6
Redundant	1	0 4	1	0 6
Total number	246	100.0	158	100 0

As can be seen from *Table 5.39*; the four main future plans in the next five years were "the same situation" (27.7%), "higher education" (15.5%), "higher position" (13.4%), and "retired" (12.6%). The four main future plans in the next ten years were "retired" (29 8%), "higher position" (13.3%), "don't know" (11.4%), and "the same situation" (10.8%).

5.10 Educational and preparative requirements for occupational health nurses

5.10.1 The education and preparation for occupational health nurses

Respondents were asked: "Which type of education and preparation do you feel occupational health nurses need?". The distribution of responses is given in *Table 5.40.*

Table 5.40 Distribution of the education and preparation needs for OH nurses.

Education and preparation [a]	Number	Percent
Health promotion knowledge and skills	184	75 4
Diploma or certification in OH nursing	150	61.5
Interaction skills	148	60.7
General nurse training and education and post-registration OH nurse course	144	59.0
Management skills	138	56.6
A RGN qualification with 2 or 3 years post-registration work on the ward and community	110	45.1
A good general education, e.g. Biology, Chemistry, Physics	72	29.5
Knowledge of the community	61	25.0
Good basic training	51	20.9
Natural, behavioural and social science	47	19.3
Introduction to OH by modules	44	18.0
Curative and rehabilitative nursing skills	43	17 6
Bachelor of science / Other degree	8	3 3
Diploma in nursing	6	2.5
Other education and preparation	3	1.2
Total number	239	100.0

[a] Choosing the five most important issues

As can be seen from *Table 5.40*; the five main education and preparation needs were found to be "health promotion knowledge and skills" (75.4%), "diploma or certification in OH nursing" (61.5%), "interaction skills" (60.7%), "general nurse training and education and post-registration OH nurse course" (59.0%), and "a RGN qualification with 2 or 3 years post-registration work on the ward and community" (45.1%).

5.10.2 The areas of continuing education for occupational health nurses

Respondents were asked: "Which continuing education areas do you feel are most important?". The distribution of responses is given in *Table 5.41* and *Table 5.42.*

Table 5.41 Distribution of the twenty most important continuing education areas for OH nurses.

Importance of continuing education	Number	Percent
Of some important	18	7.5
Most important	223	92.5
Total number	241	100.0
Continuing education areas [a]		
Occupational disease	168	69.1
Accident prevention	145	59.7
Ergonomics	144	59.3
Counselling	144	59.3
General health education	140	57.6
General Health assessment	137	56.4
Stress reduction	128	52 7
Environmental monitoring	127	52.3
Alcohol and drug abuse	121	49.8
Accident and emergency	118	48.6
Health at work	113	46.5
Health and safety law	112	46.1
Lifting and back care	110	45.3
Influencing skills	106	43.6
Healthy life styles	95	39 1
EEC legislation	90	37.0
Further and higher education	86	35.4
Health of the population	78	32.1
Absence and ill health	77	31.7
Smoking cessation	74	30.5
Techniques in teaching	74	30.5
Total number	243	100.0

[a] Choosing the twenty most important areas

As can be seen from *Table 5.41*; 93% of the sample indicated that continuing education is most important. The ten most important continuing education areas were found to be "occupational disease" (69.1%), "accident prevention" (59.7%), "ergonomics" (59 3%), "counselling" (59.3%), "general health education" (57.6%), "general health assessment" (56.4%), "stress reduction" (52.7%), "environmental monitoring" (52.3%), "alcohol and drug abuse" (49.8%), and "accident and emergency" (48.6%).

Table 5.42 Distribution of the twenty least important continuing education areas for OH nurses.

Continuing education areas	Number	Percent
Statistics	12	4.9
Project 2000	12	4.9
Advanced nursing practice	12	4.9
Teaching management	12	4.9
Radiation	11	4.5
Higher teaching certification	10	4.1
Committee work	9	3.7
Fire safety	9	3.7
Vibration	7	2.8
Asbestos	6	2 5
Solvent abuse	6	2.5
Family therapy	5	2.1
Youth worker	5	2.1
Family planning	5	2.1
Accountancy	3	1.2
Heat and cold	2	0 8
Staff reporting	1	0.4
Plastic surgery	1	0 4
Neurology	0	0.0
Micro-electronics	0	0.0
Total number	243	100.0

As can be seen from *Table 5.42*; the ten least important continuing education areas were found to be "micro-electronics" (0.0%), "neurology" (0.0%), "plastic surgery" (0.4%), "staff reporting" (0.4%), "heat and cold" (0.8%), "accountancy" (0.8%), "family planning" (1.2%), "youth worker" (2.1%), "family therapy" (2.1%), "solvent abuse" (2.5%), and "asbestos" (2.5%).

5.10 3 The special training for occupational health nurses

Respondents were asked: "Which special training areas in occupational health nursing do you feel are necessary for practice?". The distribution of responses is given in *Table 5.43*.

Table 5.43 Distribution of the special training areas which are necessary to OH nursing practice.

Special training areas [a]	Number	Percent
The work environment	197	81.1
Health surveillance for specific exposures	183	75.3
Ergonomics	163	67 1
Technical health screening skills	137	56.4
Occupational medicine	120	49.4
New technology	116	47.7
Occupational hygiene	93	38.3
Toxicology	89	36.6
Social skills	74	30.5
Chemical processes	32	13.2
Other special training areas	34	14 0
Total number	243	100.0

[a] Choosing the five most important areas

As can be seen from *Table 5.43*; the five main special training areas which are necessary to OH nursing practice were found to be "the work environment (81.8%), health surveillance for specific exposures" (76.0%), "ergonomics" (67.7%), "technical health screening skills" (56.9%), and "occupational medicine" (49.8%). Among the special training areas which are necessary to OH nursing practice included in "others" was: "counselling skills" (11 people), "management skills" (10 people), "teaching skills" (8 people), "first-aid" (6 people), "communication skills" (4 people), "presentation skills" (4 people), and "legislation" (4 people), etc. Some respondents showed more than one area in other special training.

5.11 A model for occupational health nursing

5.11.1 Reasons for need a model for occupational health nursing

Respondents were asked: "Do you think that occupational health nursing need a model to guide its practice?", and "If yes, please give your reason". The distribution of responses is given in *Table 5.44*.

Table 5.44 Distribution of the reasons for needing a model to guide OH nursing practice.

Model for OH nursing practice	Number	Percent
Yes	94	38 5
No	111	45.5
Blank	39	16.0
Total number	244	100.0
Reasons for needing an OH nursing model		
Basic guide/Framework	26	27.7
Standardisation/System approach	16	17 0
Specialist different from general nursing	8	8 5
Let employers perceive the OH nurse's work	8	8 5
To set goal/Ideal goal or direction	7	7.4
Promoting good care	4	4.3
Isolation/Work alone	4	4.3
More efficient	2	2.1
To develop the practice	1	1 1
Constantly changing and up to date	1	1.1
Continuous care	1	1 1
Blank	16	17 0
Subtotal number	94	100 0

As can be seen from *Table 5.44*; 39% of the OH nurses indicated that they need a model to guide its practice. The five main reasons for choosing a model were found to be "to provide a basic guide or framework" (27.7%), "standardisation or system approach" (17.0%), "specialist different from general nursing" (8.5%), "let employers perceive the OH nurse's work" (8.5%), and "to set goal or ideal goal or direction" (7.4%).

5.11.2 Reasons for choosing a specific model for occupational health nursing

Respondents were asked: "Which model do you feel is the most appropriate?", and "If you select a model, please give the reason for your choice". The distribution of responses is given in *Table 5.45* and *Table 5.46*.

Table 5.45 Distribution of the models chosen to guide OH nursing practice.

Models	Number	Percent
Hanasaari model	34	36.2
Orem's model	14	14.9
Willkinson windmill model	1	1.1
Other model	1	1.1
Blank	44	46.8
Subtotal number	94	100.0

Table 5.46 Distribution of the reasons for choice of model to guide OH nursing practice.

Models	Hanasaari	Orem	Willkinson	Other
Reason for choosing a model				
Fit for OH field	7 (20.6) [a]	2 (14.3)	-	-
Holistic approach	5 (14.7)	-	-	-
Promotion of self-care for worker	-	5 (35.7)	-	-
Very complete	3 (8.8)	-	-	-
Person and environment as a whole	2 (5.9)	1 (7.1)	-	-
Giving more scope to OH	-	1 (7.1)	1 (100.0)	-
Unfamiliar with the others	2 (5.9)	-	-	-
Basic guidance	-	1 (7.1)	-	-
Most appropriate and designed by OH nursing	1 (2.9)	-	-	-
Support educative role	-	1 (7.1)	-	-
Blank	14 (41 2)	3 (21.4)	-	1 (100.0)
Subtotal number	34 (100.0)	14 (100.0)	1 (100 0)	1 (100 0)

[a] ( ) is percentage.

Table 5.45 showed that 36% of the OH nurses indicated that they chose the Hanasaari model. As can be seen form *Table 5.46*; 50 out of 94 respondents identified a model for OH nursing practice, but just 32 respondents gave reasons for choosing the model. The three main reasons for choosing the Hanasaari model were found to be "fit for OH field" (20.6%), "holistic approach" (14.7%), and "very complete" (8.8%). The two main reasons for choosing the Orem's model were found to be "promotion of self-care for worker" (35.7%), and "fit for OH field" (14.3%). Some respondents showed more than one reason.

5.12 Free opinions of occupational health nurses

5.12.1 Introduction

Respondents were given the opportunity to comment on OH nursing, using a free format, after completing the other items of the questionnaire. The following *Table 5.47* categorises the views of OH nurses into positive, neutral or negative with regard to OH nursing.

Table 5.47 OH nurses' general views of OH nursing.

Topic	OH nurses' survey questionnaire respondents free comments in the final page			Total
	Positive	Neutral	Negative	
OH nurses' perceptions and beliefs	25	7	17	49
OH nursing education	6	6	8	20
OH nursing practice	4	8	4	16
Economic issues	1	1	11	13
Working environment	4	2	5	11
OH nursing professional issues	-	6	2	8
Policy and legislation	-	2	2	4
Other nurse practitioners competition	-	-	3	3
OH and safety team	1	1	2	4
Other	-	1	-	1
Total	41	34	54	129

As can be seen from *Table 5.47*; a total of 129 responses were written down concerning opinions about OH nursing: these comments were from respondents who completed the long questionnaire. In general most OH nurses believed that there was a negative future for OH nursing. Furthermore, the comments relating to "other nurse practitioners competition" were also negative. Also, there were no positive comments relating to OH nursing professional issues, policy or legislation. Concerning economic issues in OH nursing, although there were some positive comments, the overall consensus appeared to be toward negative feeling. There were mixed feelings relating to OH nurses' perceptions and beliefs, OH nursing practice, working environment and OH nursing education.

5.12.2 Occupational health nurses general views of occupational health nursing

The following statements have been chosen to illustrate many of the comments made by respondents, as they appear to be representative of the views held by OH nurses. These views have been categorised into the three broad themes of 1) job satisfaction / dissatisfaction, 2) positive, neutral and negative views regarding progressive practice and 3) views about the need for education and training.

Occupational health nurses' views concerning job satisfaction and dissatisfaction

1) Job dissatisfaction

"I thoroughly enjoy the OH environment, always challenging and plenty of variety..."

"I am very enthusiastic about occupational health. I feel qualified, experienced OH nurses have a great deal to contribute to the working man and woman in particular."

"I also feel I work to my full potential realising my talents and abilities and not being afraid to voice my limitations which I did not feel I could do within the NHS."

"...I do enjoy my job... Today I had a man in my dept that came in for indigestion mixture and ... after many questions and 'action' is now in ITU so I guess it makes it all worth it."

2) Job dissatisfaction

"I left due to job dissatisfaction - quite apparent when I check my perceived role of OH nurse against what I was actually doing!!!! Having lost crown immunity it is extremely important that the NHS pull itself together: constantly struggling with lack of funds the OH despite need a manager with good managerial skills - nurses do not usually possess these skills. Requires good communication skills also."

Occupational health nurses' views concerning progressive practice

1) Positive

"I feel quite strongly that the term 'nurse' should be avoided and 'advisor' or practitioner used instead. ...if there is a 'nurse' in uniform it must be difficult, I would have thought, to be seen to offer anything other than a treatment service. However an advisor in a suit will, I suggest, be seen as an 'equal'. Image/professionalism vision are all essential qualities of an occupational health practitioner."

"...it can be cost effective by keeping people at work - early detection of problems either physical or environmental. By providing an ideal opportunity for one to one education it enhanced the credibility of the OH nurse. It was welcomed by hospital and local GP's who were pleased to receive specialist advice and without whose support we could not have functioned so well. The result was very satisfied employees."

"In the 20 years I've been involved in OH nursing the role has changed from dispensing pills or applying a dressing. With her main role being preventative medicine. I feel I've seen this change..."

"I consider occupational health nursing to be a very important and relevant nursing profession. It has the capacity to be a very innovative and enlightening role and plays a vital part in the prevention of ill health in the workplace/community."

"Occupational Health Nursing presents an ideal medium for the well motivated nurse, allowing her the ability to extend herself to the full."

"I believe that unless occupational health nursing can get away from the traditional treatment-based uniform wearing roles and separate from medical models and doctors often untrained in either occupational health or management nursing departments that it will diminish as a speciality and merely revert to being glorified first aid."

"...nursing as a profession has changed. But with this change I have found a rewarding challenge with the turn of every new scene. Seeing so many things go in and out of vogue, has been at times a source of amusement to me."

" looking after worker at work (16yrs - 65yrs) gives one of the best opportunities and widest scope of caring for people and solving problems relating to their jobs - health education and health monitoring in the workplace."

2) Neutral

"I am convinced that my perceptions of OH nursing, the job and the future are changing so rapidly. Influences from America, the EEC and legislation are having an enormous impact... "

3) Negative

"I perceive that the trend in larger firms seem to favour 'Occupational Health Advisors' instead of OH nurses. Indeed many OH nurses in this capacity rarely do any basic treatments or injuries. ...but I can't help feeling that the basic nursing treatment skills are essential alongside the other duties. Are we losing our true identity as a 'nurse'."

"It is not yet fully recognised that OH has a vital part to play in the economic viability of industry, working towards having a healthier, happier, more productive work force. Unfortunately nurses are still to some extent viewed as ministering angels doing their job "for the cause"; therefore denying them their rightful recognition, status and salary within industry and leading also to them being under utilised by management."

"The service over the years has been very much a treatment orientated service and I find it difficult to develop the service."

"Unfortunately the majority of the work force still view the role of the nurse in industry as one to provide first aid and other treatments."

"They often have large departments and many colleagues and provide a 24 hour service. They provide treatment and accident and emergency service as well as other Occupational Health services. Often the employee initiates the contact by visiting the OH dept."

"sometimes I'm afraid that we have lost momentum and at this moment in time OH nursing seems to be floundering."

Occupational health nurses views concerning the need for education and training

"It is difficult for any nurse trained only in a hospital environment to enter the occupational health profession without acquiring some knowledge of occupational health. Nurses in occupational health must develop and pursue training to be able to advise management and employees on safety, health and legislations or they will be perceived as pills and plasters dispensers and remain reactive rather than proactive."

"What I would like to see in OH nursing is a forceful representative body pushing for recognition of the need for post qualification."

"Grants for maintenance and fees should be made available to both the nursing and medical professions to enable OH education."

"Occupational Health nursing is a continually developing area and I feel that entry to the speciality should require at least some community experience or at least a wide variety of experience."

"Would like to see more education (health) in the workplace. Also feel the OHNC course should be more freely available when first starting employment not have to wait 2 years as I did. Even better would be I weeks OH placement during training."

"It is absolutely essential for nurses to obtain OH qualifications before offering themselves for candidates for OH jobs. Experience is essential before taking a OH job."

"The OH nursing certificate course for many years was all that was available to nurses. It does not now meet the standard of OH education now required. The poor OH services that still exist are almost the direct result of the untrained OH nurse and doctor."

"I feel OH nurse have a major role in the workplace. However, I can only fulfil this role by being trained to the highest level. Although many nurses wish to drop the title nurses I do not. We should be proud to have this title unfortunately some OH nurses feel it belittles them and they believe management and other professional colleagues consider it to be a second class qualification (one has taken up nursing because one is not clever enough to do other things). We need to educate ourselves and colleagues that rightly nursing is a first choice profession equal but different to other professions."

"Unfortunately there are too few courses available especially conversion from certificate to Diploma."

"Occupational Health nursing should have mandatory training requirements."

Working environment

Comments concerning the working environment mainly related to issues of communication. They were, not surprisingly, fairly well spread between positive, neutral and negative statements.

Of the positive statements the following elements of the working environment were explicitly mentioned as important: enjoyment, challenge, support and good atmosphere.

Interestingly, the most prevalent negative comment mentioned was about isolation. For example one respondent stated that "Professional isolation has always been a problem with Occupational Health Nursing...".

The only other two negative comments were concerned with the decreasing relationship with an employer and stagnation in small units. Although only two statements were made about the effect of working in either small or large units, it seemed that larger units may have been viewed more positively. This was in terms of job prospects and career opportunities, whereas smaller units may have been viewed as less enterprising - ie, stagnant.

Economic issues

Of all the topics mentioned by OH nurses it was only those relating to economic issues, where the balance of responses was weighted so heavily towards the negative.

Only 2 of the 13 statements were not negative ones. The one positive comment dated to the 1970's: "I came to occupational Health originally because it was better pay in the 70's and I had a husband to support...". The neutral comment discussed the issue of companies sponsoring nurses to obtain the OHNC, where it would appear to be advantageous to work for a larger company rather than a smaller one that is less likely to be financially able to fund nurses education.

Numerous negative comments reflecting the perceived effect of the recession were apparent. Two referred directly to the economic climate and three to the recession. For a number of respondents, economic issues threatened their job security, value and status:

"I'm possibly regarded as an expensive luxury which is nonessential and therefore if budgets have to be cut further then I can see my job either becoming part-time or redundant".

"The security of our jobs is largely dependent on the current economic climate, it is up to nurses to make themselves invaluable to their organisation, unfortunately as it is difficult to put a value on the job we do this is not always easy".

"In these times of recession I have been asked to take on other roles in the factory..... In an ideal world the nurse would not do these jobs but by doing them I have managed to keep my job which is important to me".

"Feel that the OH nurse role will be devalued due to recession".

Another major concern associated with economic issues is that of education and training. Three OH nurses commented upon the difficulty of funding places on either diploma or certificate courses, and expressed a wish for more support in obtaining grants or sponsorship. For example, one respondent communicated that "Occupational nurses should be self motivated enough to pursue a professional career but the backing of professional bodies and financial support would make this more easily attainable".

Another nurse commented that the willingness of some nurses to pay for their own advanced education compounds the problem, in that smaller firms take advantage of these motivated nurses and are not encouraged to provide educational fees despite the fact that their organisation will benefit:

"I personally have paid for all my current OH qualifications and have spoken to many other OH nurses who have had the same problems in receiving sponsorship. Employers use this as an excuse for not paying, especially the smaller firms. If we are to raise our profile and continue to offer professional service then this factor must be established as a firm foundation".

Policy and legislation

Only 4 comments were included in this category, as they specifically mentioned policy or legislation as the main issue. However, some of the comments in the previous section about professional issues are also related, in that some of the topics overlap. For instance, two respondents stated that the promotion of OH via political change would increase status and recognition, which were the very issues pertinent to the professionalism of OH nursing raised in the previous section. Another comment suggested that information and education about salient issues relating to legislation and policy was important.

Competition from other practitioners or professionals

Only three comments referred to perceived competition from other nurses or specialists. As expected these were all couched in negative terms - as threats to autonomy in practice. Two were specifically concerned with the future of Occupational Health nursing and its relationship to Community nursing:

"Occupational Health nursing is a specialist area and as such should remain an independent qualification not tied in with community nurses".

"I think if the proposed changes to take Occupational Health into Community care occur it will be detrimental to the service".

One respondent commented more generally, in that: "The OH nurse needs to have a wide knowledge and be able to perform a variety of different roles effectively (eg, ergonomist, safety and industrial hygiene) to prevent parts of her job being taken by other specialists....".

Chapter 6. Analysis of the Occupational Health Nurses' Survey

6.1 Introduction

This chapter aims to present the analytical results of the OH nurses' survey. In Section 6.2, analysis was conducted using the Kappa statistical test, and the differences between OH nurses' actual and ideal roles and actual and ideal functions are presented.

Analysis of the factors influencing OH nurses' actual roles and functions has been divided into five sections as follows: personal factors, professional background, perceptions and beliefs, working environment and OH and safety team.

6.2 Differences between occupational health nurses' perceptions of roles and functions

6.2.1 Comparison between occupational health nurses' actual and ideal roles

A comparison of OH nurses' perceived actual and ideal roles is given in *Table 6.1* and *Figure 6.1*. A comparison of the degree of agreement between actual and ideal roles was carried out using a Kappa statistical test and the results are shown in *Table 6.2*.

Table 6.1 and *Figure 6.1* illustrates the proportions of OH nurses who perceived specified roles as ideal and those who considered them as actual. A proportion of OH nurses reported their actual roles to include "health surveillance", "consultant", "training" and "management" and also considered them to be ideal roles. However, larger numbers of OH nurses perceived "environmental surveillance", "education" and "research" roles as ideal, rather than actual, roles. Fewer respondents considered the "therapeutic" "emergency responsibility" and "health screening" as actual roles.

Table 6.1 Comparison between OH nurses' actual and ideal roles.

Role [a]	Actual roles		Ideal roles	
	Number	Percent	Number	Percent
1. Therapeutic role	109	45.2	46	19.1
2. Emergency responsibility role	171	71.0	80	33.2
3. Health surveillance role	188	78.0	212	88.0
4. Health screening role	211	87.6	170	70.5
5. Environmental surveillance role	96	39.8	164	68.0
6. Consultant role	76	31.5	96	39.8
7. Education role	159	66.0	200	83.0
8. Training role	98	40.7	82	34.0
9. Management role	51	21.2	67	27.8
10. Research role	10	4.1	68	28.2
Total number	241	100.0	241	100.0

[a] Choosing the five most important roles.

Figure 6.1 Comparison between OH nurses' actual and ideal roles.

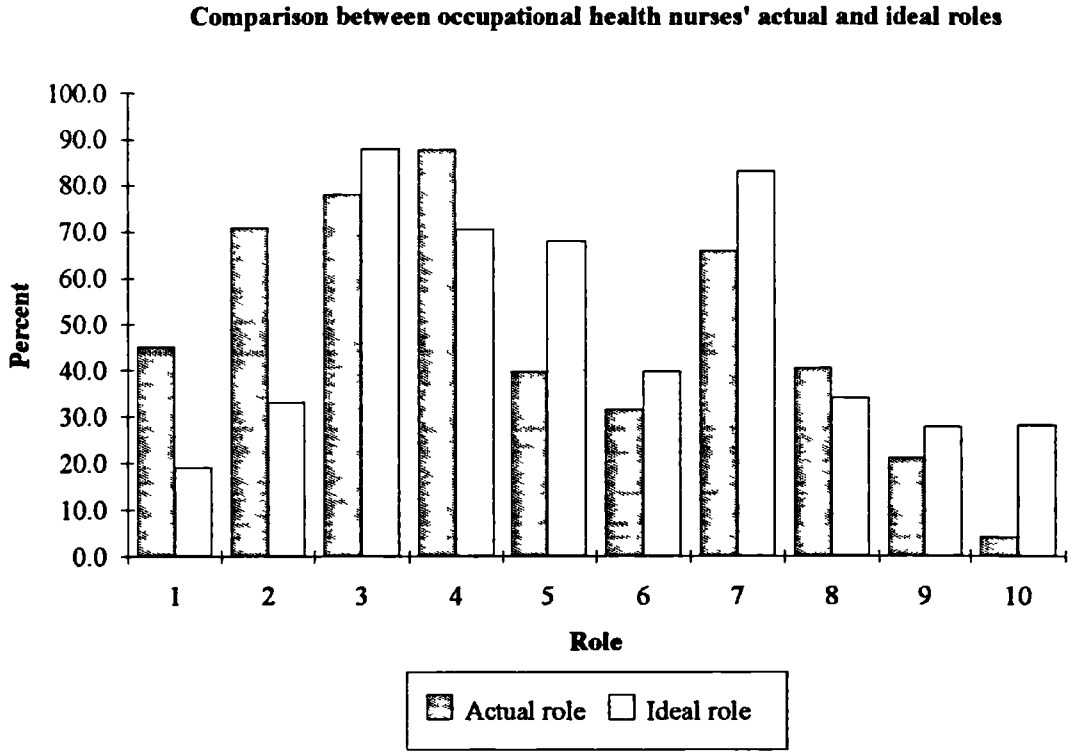


Table 6.2 Comparison agreement of actual and ideal roles of OH nurses.

Actual roles	Ideal roles		Kappa*
	Yes	No	
Management role			
Yes	28	22	0.3144
No	39	150	
Consultant role			
Yes	45	29	0.2764
No	51	114	
Emergency responsibility role			
Yes	75	95	0.2753
No	4	65	
Therapeutic role			
Yes	34	75	0.2386
No	11	119	
Environmental surveillance role			
Yes	79	16	0.2213
No	84	60	
Education role			
Yes	142	16	0.2091
No	58	23	
Training role			
Yes	44	54	0.1916
No	37	104	
Health surveillance role			
Yes	169	17	0.1611
No	41	12	
Health screening role			
Yes	153	56	0.1265
No	16	14	
Research role			
Yes	7	3	0.1149
No	61	168	

As can be seen from *Table 6.2*, all the ideal and actual roles showed a poor to fair agreement (a Kappa value under 0 40). The poorest agreement between actual and ideal roles was found with "health screening", "training", "health surveillance" and "research". Large numbers of OH nurses perceived the "health surveillance", "environment surveillance", "consultant", "education", "management" and "research" roles as ideal whereas far fewer reported these as being part of their actual role. Many respondents reported their actual role as "therapeutic", "emergency responsibility", "health screening" and "training" but did not necessarily perceive these as being ideal roles. These latter roles are more treatment oriented and focus more on clinical skills or routine work. They conform to a more traditional medical model of care where nurses play an assisting role. These ideal roles are prevention oriented and require broad knowledge and skill and for the nurse to play an independent or collaborative role.

6.2.2 Comparison between occupational health nurses' actual and ideal functions

A comparison of OH nurses' actual and ideal functions is given in *Table 6.3* and *Figure 6.2*. A comparison agreement of actual and ideal functions was carried out using a Kappa statistical test and the results are shown in *Table 6.4*.

Table 6.3 and *Figure 6.2* illustrates the proportions of OH nurses who perceived specified functions as ideal and those who considered them as actual. A proportion of OH nurses who reported their actual functions to include "health supervision of the worker", "general health surveillance", "specific health surveillance", "occupational safety", "individual counselling", "assisting psycho-sociological problems", "first aid training for workers", "development and maintenance of records" and "meetings and communication", also considered them to be ideal functions. However, larger proportions of OH nurses perceived "rehabilitation and resettlement", "assessment of exposure", "familiarisation with work environment", informing workers of health hazards", "health education and promotion" and "co-operation with outside agencies" functions as ideal rather than as part of their actual functions. Fewer respondents considered the "provision of routine treatment service", "emergency treatment", "record keeping", "health screening" and "immunisation" functions as ideal compared to them being actual functions.

As can be seen from *Table 6.4*, all of the ideal and actual functions showed a poor to fair agreement with the exception of the "occupational safety" function. The poorest agreement between actual and ideal function was found with "provision of a routine treatment service". Large numbers of OH nurses perceived the "rehabilitation and resettlement", "assessment of the nature and degree of exposure", "familiarisation with work environment", "informing workers of health hazards", "health education and promotion", "meetings and communication" and "co-operation with outside agencies" functions as ideal whereas far fewer reported these as actual functions. These functions relate to protective or preventive issues, which require broad knowledge and skills. Many reported their actual functions as "provision of a routine treatment service", "emergency treatment for accident and illness", "record keeping", "health screening" and "immunisation" but did not necessarily perceive these as ideal functions. These functions are more treatment oriented and focus more on clinical skills and routine work.

Table 6.3 Comparison between the actual and ideal functions of OH nurses.

Functions [a]	Actual functions		Ideal functions	
	Number	Percent	Number	Percent
1. Provision of a routine treatment service	142	58.4	35	14 5
2. Rehabilitation & resettlement	101	41.6	155	64.0
3. Emergency treatment	181	74.5	128	52.9
4. Health supervision of worker,	148	60.9	158	65 3
5. Assessment of exposure	30	12.3	94	38.8
6. General health surveillance	113	46.5	105	43.4
7. Specific health surveillance	121	49.8	129	53 5
8. Record keeping	173	71.2	131	54.1
9 Health screening	174	71.6	113	46 7
10. Immunisation	86	35.4	34	14.0
11. Familiarisation with work environment	130	53.5	169	69.8
12. Informing workers of health hazards	83	34.2	138	57.0
13. Occupational safety	46	18.9	68	28.1
14. Individual counselling	177	72.8	166	68.6
15. Assisting psycho-sociological problem	40	16.5	43	17.8
16. Health education & promotion	171	70.4	213	88.0
17. First-aid training for workers	121	49.8	119	49.2
18. Development & maintenance of record	146	60.1	135	55.8
19. Meetings & communication	126	51.9	142	58.7
20. Co-operation with outside agencies	68	28.0	108	44.6
Total number	243	100.0	242	100.0

[a] Choosing the ten most important functions.

Figure 6.2 Comparison between the actual and ideal functions of OH nurses.

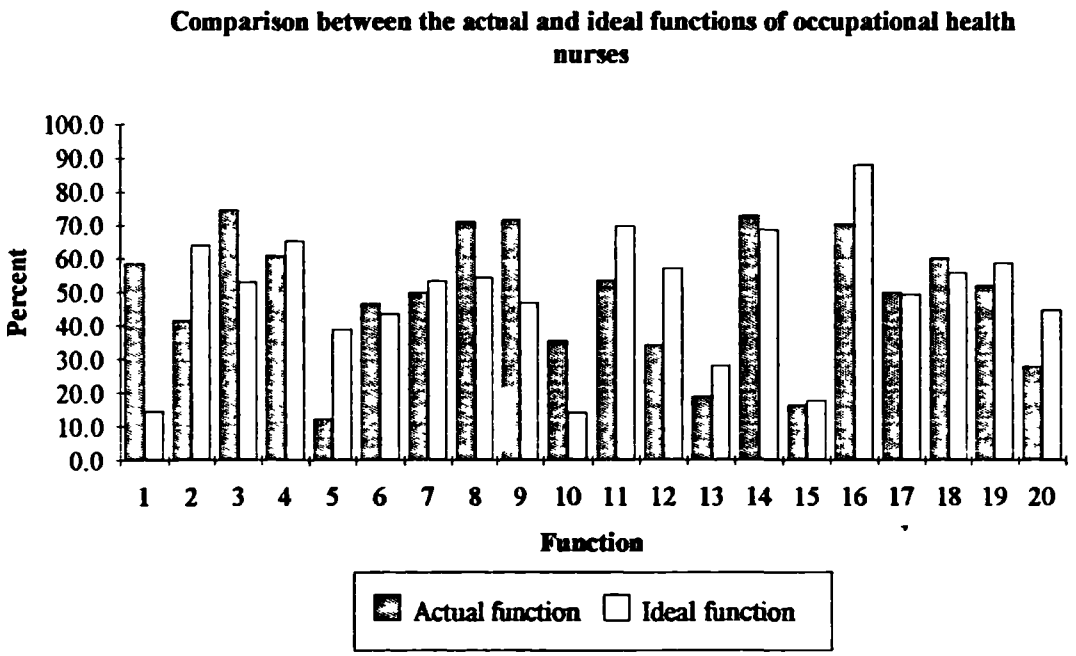


Table 6.4 Comparison agreement of actual and ideal functions of OH nurses.

Actual functions	Ideal functions		Kappa*
	Yes	No	
Occupational safety			
Yes	32	14	0.4328
No	36	160	
Health supervision of workers			
Yes	118	29	0.3897
No	40	55	
Assisting psycho-sociological problems			
Yes	20	20	0.3749
No	23	179	
Specific health surveillance			
Yes	86	35	0.3554
No	43	78	
Immunisation			
Yes	29	57	0.3531
No	5	151	
Rehabilitation and resettlement			
Yes	85	15	0.3302
No	70	72	
Record keeping			
Yes	112	61	0.3145
No	19	50	
First-aid training for workers			
Yes	78	42	0.3140
No	41	81	
Co-operation with outside agencies			
Yes	48	20	0.3062
No	60	114	
General health surveillance			
Yes	66	47	0.2830
No	39	90	
Development and maintenance of records			
Yes	97	48	0.2726
No	38	59	
Emergency treatment			
Yes	110	70	0.2516
No	18	44	
Individual counselling			
Yes	133	43	0.2441
No	33	33	
Meeting and communication			
Yes	87	38	0.2270
No	55	62	
Informing workers of health hazards			
Yes	61	22	0.2164
No	77	82	
Assessment of exposure			
Yes	22	7	0 2137
No	72	141	
Health screening			
Yes	94	80	0.2049
No	19	49	
Familiarisation with work environment			
Yes	102	27	0 2022
No	67	46	
Health education and promotion			
Yes	158	12	0.2000
No	55	17	
Routine treatment			
Yes	30	112	0 1392
No	5	95	

6.2.3 Summary

Discrepancies were found with respect to both OH nurses' perceptions of actual and ideal roles and actual and ideal functions. It would appear that OH nurses' actual roles and functions remain treatment orientated, focusing on clinical skills in the traditional mode, whereas ideal roles and functions were perceived as health focused and prevention orientated, requiring broad knowledge and skills.

6.3 The influence of personal factors on actual roles and functions

6.3.1 General data

Gender

A comparison of OH nurses' actual roles and actual functions between the two gender groups was carried out using a series of Chi-square statistical tests. The results are given in *Table A 1.1* and *Table A 1.2.* (Appendix A1.) No significant differences were found between the two gender groups with respect to their actual roles. In the majority of cases there was no significant difference between the gender groups with respect to their actual functions. Only two functions, "immunisation" (P=0.038) and "development and maintenance of records" (P=0.007), were statistically different between the two gender groups. The male group was found to have more responsibility for immunisation and the female group more responsibility for development and maintenance of records.

Age

A comparison of OH nurses' actual roles and actual functions was carried out between two age groups using a series of Chi-square statistical tests. The results are given in *Table A.3* and *Table A.4.* (Appendix A.) The two age groups included those nurses less than 45 years old and those 45 years and older. No statistical differences were found between the age groups with respect to their actual roles. In the majority of cases there was no significant difference between the age groups with respect to their actual functions. Only one function, "first-aid training for workers" (P<0.001), was found to be statistically different between the two age groups. It was found that the younger age group had more responsibility for first-aid training.

Marital status

A comparison of OH nurses' actual roles and actual functions with respect to marital status was carried out using a series of Chi-square statistical tests. The results are given in *Table A.5* and *Table A.6.* (Appendix A.) The OH nurses were divided into two marital status groups: married

and non-married. No statistical difference was found between the two marital status groups with respect to their actual roles and actual functions.

6.3.2 Current post

Status

A comparison of OH nurses' actual roles and actual functions with respect to three status groups was carried out using a series of Chi-square statistical tests. The results are given in *Table A.7* and *Table A.8.* (Appendix A.) The three status groups included: high (including OH managers and nursing advisors), middle (including senior nurses) and low (including staff nurses, senior enrolled nurses and enrolled nurses) status. In the majority of cases there were no significant difference between the three status groups with respect to their roles and functions. Only two roles, the "therapeutic role" (P=0.014) and "management role" (P=0.005), were significantly different between the three groups. It was found that those in the lower status group had more of a therapeutic role and those in the higher status group had more of a managerial role. No statistical difference was found between the three status groups with respect to their actual functions.

Duty pattern

A comparison of OH nurses' actual roles and actual functions with respect to two duty pattern groups was carried out using a series of Chi-square statistical tests. The results are given in *Table A.9* and *Table A.10.* (Appendix A.) The OH nurses were divided into two duty pattern groups; day duty and shift work. In the majority of cases there was no significant difference between the two duty pattern groups with respect to their roles and functions. Only two roles "emergency responsibility" (P=0.006) and "education" (P=0.017), were statistically significant. The shift work group was found to have more of an emergency responsibility role and the day duty group had more responsibility for education. Only one function, "meeting and communication" (P=0.001), was significantly different. It was found that the day duty group had more responsibility for meeting and communication.

Working hours

A comparison of OH nurses' actual roles and actual functions with respect to three working hours groups was carried out using a series of Chi-square statistical tests. The results are given in *Table A.11* and *Table A.12.* (Appendix A.) The OH nurses were divided into three working hours groups: less than 35 hours/week, 35-39 hours/week and 40 hours/week or over. No statistical difference was found between the three groups with respect to their actual roles. In the majority of cases there was no significant difference between the three working hours groups with respect to their actual functions. Only one function, "record keeping" (P=0.011), was significantly different

for these three groups. It was found that those nurses who worked less than 35 hours/week had more responsibility for record keeping.

Salary

A comparison of OH nurses' actual roles and functions with respect to four salary groups was carried out using a series of Chi-square statistical tests. The results are given in *Table A.13* and *Table A.14.* (Appendix A.) The OH nurses were divided into four salary groups: less than £13,000, £13,000-15,999, £16,000-19,999 and £20,000 or more per year. In the majority of cases there was no significant difference with respect to the four salary groups and their actual roles. Only two roles, "emergency responsibility" (P=0.004) and "management" (P<0.001). were statistically significant. It emerged that the lower salary group had more of an emergency responsibility role and the higher salary group had a more managerial role. Four functions, "provision of a routine treatment service" (P=0.014), "rehabilitation and resettlement" (P<0.001), "record keeping" (P=0.004), and "occupational safety" (P=0.037), were significantly different between the four salary groups. It was found that the lower salary groups had more responsibility for record keeping. The £13,000-15,999 group had more responsibility for provision of a routine treatment service. The £16,000-19,999 group had more responsibility for rehabilitation and resettlement while the £20,000 or more group had more responsibility for occupational safety.

6.3.3 Motivation

Reasons for choosing a post in occupational health nursing

A comparison of OH nurses' reasons for choosing a post in OH nursing, with respect to their actual roles and actual functions, was carried out using a series of logistic regression tests. The results are given in *Table 6.5* and *Table 6.6.* The reasons for choosing OH nursing were retrospectively divided into two groups to aid discussion: personal factors ("day time work only" and "to earn money for essentials") and professional factors ("to develop a professional career", "independent work", "to care for healthy people" and "more challenge").

Table 6.5 shows which motivational factors were significant for each actual role and illustrates the roles for which each type of motivational factor was seen as important. Thus it can be seen that significantly more nurses acting in the "emergency responsibility", "health surveillance", "health screening" and "education" roles identified reasons which influenced their choice of an OH nursing job. Those nurses acting in the "emergency responsibility" role reported both personal and professional reasons; the stronger of these being personal; "to earn money for essentials" (P<0.001). Those acting in the "health surveillance" role reported only professional reasons; the strongest being "to develop a professional career" (P<0.001). Reasons reported by those nurses

acting in both the "health screening" and "education" roles were all professional. The stronger reason for those nurses acting in an "education" role was "to develop a professional career" (P<0.001). Significantly less nurses acting in the "environmental surveillance", "management" and "consultant" roles reported personal and professional reasons influencing their choice. The most significant of these for those in the "consultant" role was the professional factor; "independent work" (P<0.001). Professional factors were significantly less frequently reported by those acting in a "training" role and "research" role. For those in the latter role, the most significant were "to develop a professional career" and "independent work" (P<0 001).

Table 6.6 shows which motivational factors were significant for each actual function and illustrates the functions for which each type of motivational factor was seen as important. Significantly more OH nurses involved in "emergency treatment", "health screening" and "individual counselling" reported both professional and personal factors influencing their choice of OH nursing work. The strongest of these was professional, "more challenge" (P<0.001) for those involved in "emergency treatment" and "health screening". Of those nurses with "provision of routine treatment service" functions, all of the significant reasons were personal. Of those nurses with "record keeping", "health education and promotion", "health supervision of workers" and "development and maintenance of records" functions, all of the significant factors were professional. The strongest of these was "more challenge" (P<0.001), for those with "record keeping" and "health supervision of workers" functions. Significantly less nurses adopting "assessment of the nature and degree of exposure", "immunisation", "informing workers of health hazards" and "assisting workers with psycho-sociological problems" functions reported professional factors influencing their choice. Of these, the most significant were "to develop a professional career" (P<0.001) in those functioning in the areas "informing workers of health hazards" and "assisting workers with psycho-social problems" functions; and "independent work" (P<0.001) for those "assisting workers with psycho-social problems". Significantly less nurses adopting "occupational safety" and "co-operation with outside agencies" functions reported both professional and personal factors influencing their choice of OH nursing work.

Table 6.5 The influence of reasons for choosing an OH nursing job on actual roles.

Actual roles	Professional				Personal	
	Development professional career	Independent work	Care healthy people	More challenge	Earn money for essentials	Day time work only
Health surveillance	0.88** [a]	0.73**	1.42**	0.96**		
Health screening	1.15***	0.78**				
Education	0 75***					
Emergency responsibility			0.73*	0.58**	1.62***	
Therapeutic						
Training		-0.47*				
Environmental surveillance		-0.45*			-0 70*	
Consultant		-0.73***				-0.77**
Management	-0.54*		-0.72*	-0.71**	-0.85*	
Research	-2.03***	-2.52***	-2.30*			

[a] Logistic regression test, regression coefficient, * P<0.05, ** P<0.01, *** P 0.001.

Table 6.6 The influence of reasons for choosing an OH nursing job on actual functions.

Actual functions	Professional				Personal	
	Development professional career	Independent work	Care healthy people	More challenge	Earn money for essentials	Day time work only
Health screening			0.87** [a]	0.89***		
Health supervision of worker				0.61***		
Health education & promotion	0.58**	0.54*	0.67*			
Individual counselling	0.63**	0.51*	0.95**			
Emergency treatment for accident				1.07***	1.18**	
Routine treatment					1.21**	0.53*
Record keeping				0.75***		0.94**
Development & maintenance of records	0.48**					
Co-operation with outside agencies				-0.74***	-1.22**	
Informing workers of health hazards	-0.70***					
Occupational safety	-0.93**			-0.83**		-0.80*
Assessment of exposure	-0.74*	-0.77*	-1.31**	-0.78*		
Assisting with socio-psychological problems	-0.98***	-1.17***	-1.04*			
Rehabilitation & resettlement						
Immunisation	-0.50**	-0 45*				
Familiarisation with work environment						
First-aid training for workers						
Meetings & communication						
General health surveillance						
Specific health surveillance						

[a] Logistic regression test, regression coefficient, * P<0.05, ** P<0 01, *** P<0.001.

Reasons for continuing the present post in occupational health nursing

A comparison of OH nurses' reasons for continuing in their present post in OH nursing, with respect to their actual roles and actual functions, was carried out using a series of logistic regression tests. The results are given in *Table 6.7* and *Table 6.8*. The reasons for continuing in their OH nursing post were retrospectively divided into two groups to aid discussion: personal factors ("fixed work pattern", "high salary and more annual leave entitlement" and "to earn money for essentials") and professional factors ("to develop a professional career", "independent work", "to care for healthy people", "enjoyment of work" and "continuing challenge").

Table 6.7 shows which reasons were significant for each actual role.The table illustrates the roles for which each reason was seen as important. Thus it can be seen that significantly more nurses acting in the "emergency responsibility", "health surveillance", "health screening" and "education" roles mentioned reasons which influenced their choice to continue in their current OH nursing job. Those nurses acting in the "emergency responsibility" role reported both personal and professional reasons; the strongest of these being professional; "enjoyment of work" ($P<0.001$). Those acting in the "health surveillance" role also reported both personal and professional reasons. Reasons reported by those nurses acting in both the "health screening" and "education" roles were all professional. The strongest reason for both of these groups was "enjoyment of work" ($P<0.001$). Significantly less nurses acting in the "management" and "research" roles reported certain personal and professional reasons influencing their choice to continue in their current OH nursing post. The most significant of these for both groups was the professional reason; "enjoyment of work" ($P<0.001$). Professional reasons were significantly less reported by those acting in "therapeutic", "consultant", "environmental surveillance" and "training" roles. The most significant of these for those acting in a "consultant" role was "enjoyment of work" ($P<0.001$).

Table 6.8 shows which reasons were significant for each actual function and illustrates the functions for which each reason was seen as important. Thus it can be seen that significantly more nurses with "emergency treatment", "record keeping" and "development and maintenance of records" functions mentioned both professional and personal reasons which influenced their choice to continue in their current OH nursing job; the most significant for those involved in the former two functions was the professional reason of "enjoyment of work" ($P<0.001$). Significantly more nurses with "health supervision", "health screening", "individual counselling" and "health education and promotion" functions reported professional reasons for continuing in their current OH nursing job; the most significant of these reasons were a

"continuing challenge" (P<0.001) for those with "health supervision" and health "education and promotion" functions and "enjoyment of work" (P<0.001) for those with "health screening" and "individual counselling" functions. Significantly more nurses with "provision of routine treatment service" and "meetings and communication" functions reported personal reasons for continuing in their current OH nursing job. Significantly less nurses with "assessment of the degree and nature of exposure", "assisting workers with socio-psychological problems" and "co-operation with outside agencies" functions reported professional and personal factors influencing their choice to continue in their current OH nursing post; the most significant of these was the professional factor "enjoyment of work" (P<0.001) for those with "co-operation with outside agencies" functions. Professional reasons were significantly less reported by those with "immunisation", "informing workers of health hazards", and "occupational safety" functions; the most significant of these were a "continuing challenge" (P<0.001) for those with "immunisation" functions and "enjoyment of work" for those with "informing workers of health hazards", and "occupational safety" functions.

Table 6.7 The influence of reason for continuing an OH nursing job on actual roles.

Actual roles	Professional					Personal		
	Enjoyment of work	Development professional career	Independent work	Care for healthy people	Continuing challenge	Earn money for essentials	Fixed work position	High salary and more annual leave
Health surveillance	1.95*** [a]		0.99*					
Health screening	0.72**	0.69*	0.63*			0.79*		
Emergency responsibility	0.70***				-0.37*			
Education	0.81***					0.85*		1.30*
Therapeutic								
Environmental surveillance	-0.38**							
Consultant	-0.45**							
Training	-0.77***							
Management	-1.30***					-0.92*		
Research	-2.56***				-1.88***	-2.50*		

[a] Logistic regression test, regression coefficient, * P 0.05, ** P 0.01, *** P 0.001.

Table 6.8 The influence of reasons for continuing an OH nursing job on actual functions.

Actual functions	Positive		Professional			Personal		
	Enjoyment of work	Very important position	Independent work	Care for healthy people	Continuing challenge	Earn money for essentials	Fixed work pattern	High salary and more annual leave
Health screening	0.92*** [a]							
Health supervision of worker					0.61***			
Health education & promotion			0.56*	1.71**	0.72***			
Individual counselling	1.11***							
Emergency treatment for accident	0.99***					0.92*		
Routine treatment						1.02**		
Record keeping	0.72***					0.93*		
Development & maintenance of records	0.31*						0.81*	
Co-operation with outside agencies	-0.77***	-1.51*				-1.11**		
Informing workers of health hazards	-0.65***							
Occupational safety	-1.29***		-1.08**					
Assessment of exposure	-0.87**		-0.89*		-0.98**		-1.36**	
Assisting with socio-psychological problems	-0.89**				-0.81**	-1.42**	-0.87*	
Rehabilitation & resettlement							-0.75**	
Immunisation								
Familiarisation with work environment								
First-aid training for workers								
Meetings & communication								1.32*
General health surveillance					-0.70***			
Specific health surveillance								-1.03*

[a] Logistic regression test, regression coefficient, * P<0.05, ** P<0.01, *** P<0.001.

6.3.4 Job satisfaction

A comparison of OH nurses' job satisfaction, with respect to their actual roles and functions, was carried out using a series of logistic regression tests. The results are given in *Table 6.9* and *Table 6.10*. *Table 6.9* shows which factors were significant for each actual role and illustrates the roles for which each factor was seen as important. Thus it can be seen that significantly more nurses acting in the "emergency responsibility", "health surveillance", "health screening", "consultant" and "education" roles reported satisfaction with aspects of their job. Those nurses acting in the "emergency responsibility" and "health surveillance" roles reported significant satisfaction with their work "relationships" ($P<0.001$). Significant satisfaction was expressed by nurses working in the "health screening" role with regard to "working hours" ($P<0.001$) and by those in a "consultant" role with respect to "welfare". Nurses working in an "education" role reported significant satisfaction with "facilities for direct care" ($P<0.001$). Significantly less nurses acting in the "environmental surveillance", "training", "management" and "research" roles reported satisfaction with various aspects of their job. This was considered to indicate dissatisfaction. The most significant of these for those acting in "training" and "research" roles was "working hours" ($P<0.001$). For those acting in an "environmental surveillance" it was "welfare" ($P<0.001$) and those in "management" it was work "relationships" ($P<0.001$).

Table 6.10 shows which factors were significant for each actual function. It is instructive to consider the table as showing the functions for which each factor was seen as important. Thus it can be seen that significantly more nurses with "provision of a routine treatment service", "emergency treatment", "health supervision", "health screening", "individual counselling", "health education and promotion", "development and maintenance of records" and "co-operation with outside agencies" functions reported satisfaction with respect to their job. The most significant of these were satisfaction with "working hours" ($P<0.001$) for those with "individual counselling" and "health education and promotion" functions; satisfaction with work "relationships" ($P<0.001$) for those with "emergency treatment" functions; satisfaction with "roles and functions" ($P<0.001$) for those with "health supervision" functions and satisfaction with "facilities for direct care" ($P<0.001$) for those with "health supervision" functions. Significantly less nurses with "rehabilitation and resettlement", "assessment of exposure", "record keeping", "informing workers of health hazards", "occupational safety", "assisting with psycho-social problems", "development and maintenance of records" and "co-operation with outside agency" functions reported satisfaction with various aspects of their job. This was considered to indicate dissatisfaction. The most significant of these for those with "assessment of exposure", "occupational safety", and "assisting workers with psycho-social problem" functions was "working hours" ($P<0.001$). For those with "informing workers of health hazards" functions, the most significant was "welfare" ($P<0.001$).

Table 6.9 The influence of job satisfaction on actual roles.

Actual roles	Relationships	Working hours	Welfare	Direct care
Health surveillance		0.57*** [a]		
Health screening	0.39***			
Education				0.19***
Emergency responsibility	0.25***			
Therapeutic				
Training		-0.11**		
Environmental surveillance			-0.15***	
Consultant	-0.78***		0.62*	
Management	-0.39***			
Research		-0.94***		

[a] Logistic regression test, regression coefficient, * P 0 05, ** P 0 01, *** P<0.001.

Table 6.10 The influence of job satisfaction on actual functions.

Actual functions	Relationships	Working hours	Welfare	Direct care	Role /Function	Professional development
Health screening				0.26*** [a]	0.16***	
Health supervision of worker						
Health education & promotion		0.24***				
Individual counselling		0.27***				
Emergency treatment for accident	0.34***					
Routine treatment		0.11**				
Record keeping	0.89**					-0.68*
Development & maintenance of records			0 69**	-0 50**		
Co-operation with outside agencies		-0 44*		0.75**	-0.64*	
Informing workers of health hazards			-0.21***			
Occupational safety		-0.42***				
Assessment of exposure		-0 55***				
Assisting with socio--psychological problems		-0 48***				
Rehabilitation & resettlement	-0.09*					
Immunisation				-0 19***		
Familiarisation with work environment						
First-aid training for workers						
Meetings & communication						
General health surveillance						
Specific health surveillance						

[a] Logistic regression test, regression coefficient, * P<0 05, ** P<0.01, *** P<0.001.

6.4 The influence of professional background factors on actual roles and functions

6.4.1 Statutory qualification

A comparison of OH nurses' actual roles and actual functions with respect to two statutory qualification groups was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.15* and *Table A1.16.* (Appendix A1.) The two statutory qualifications were RGN's and EN's. No statistical difference was found for the two statutory qualification groups with respect to their actual roles and functions. In the majority of cases there was no significant difference for the two statutory qualification groups with respect to their actual functions. Only two functions, "provision of a routine service" (P=0.048) and "rehabilitation and resettlement" (P=0.048), were found to be significantly different with respect to the two groups. Enrolled nurses were found to have more responsibility for provision of a routine service, and the registered nurses had more responsibility for rehabilitation and resettlement.

6.4.2 Other professional qualifications

A comparison of OH nurses' actual roles and functions with respect to four professional qualification groups was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.17* and *Table A1.18.* (Appendix A1.) The four professional qualification groups include: nurses with no OH nursing training, nurses with OHPN training, nurses with OHNC training, and nurses with OHND training.

In the majority of cases there was no significant difference for the four professional qualification groups with respect to their actual roles. Only two roles, "emergency responsibility" (P=0.021) and "management" (P<0.001), were significantly different with respect to the four professional qualification groups. It was found that with the exception of the "no OH nursing training group", those nurses holding a lower OH qualification had an increasingly more substantial emergency role and that the greater the professional qualification, the more substantial the management role.

Five functions, "provision of a routine treatment service" (P=0.016), "emergency treatment for accident and illness" (P=0.023), "rehabilitation and resettlement" (P<0.001), "meeting and communication" (P=0.032), and "first-aid training for workers" (P=0.016) were statistically different with respect to the four professional qualification groups. It was found that with the exception of the "no OH nursing training group", those nurses holding a lower OH qualification had increasingly more responsibility for the provision of routine treatment and emergency treatment for accident and illness. It was also found that the higher the professional qualification, the more the responsibility for rehabilitation and resettlement, and meeting and communication.

The function of "first-aid training for workers" was more prevalent within the OHNC trained group.

6.4.3 Short professional courses

A comparison of OH nurses' actual roles and actual functions with respect to two short professional course groups was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.19* and *Table A1.20.* (Appendix A1.) The two categories were nurses who had attended short professional courses, and nurses who had not attended short professional courses.

In the majority of cases there was no significant difference for the two short professional course groups with respect to their actual roles. Only one role, the "education role" (P=0.049), was statistically significant with respect to the two groups. There was no significant difference between OH nurses' actual functions with respect to the two short professional course groups. Only one function, "health screening" (P=0.034), was statistically significant with respect to the two short professional course groups. The nurses who had attended short professional courses had more responsibility for health screening.

6.4.4 Clinical nursing experience

A comparison of actual roles and functions with respect to four categories of clinical nursing experience was carried out using a series of Chi-square statistical tests with the results given in *Table A1.21* and *Table A1.22.* (Appendix A1.) The four clinical nursing experience categories were no clinical nursing experience, less than five years clinical nursing experience, 5-9 years clinical nursing experience, and 10 years or more clinical nursing experience.

In the majority of cases there was no significant difference for the four groups with respect to their actual roles. Only one actual role, "emergency responsibility role" (P=0.025), was statistically significant with respect to the four clinical nursing experience groups; in that the 5-9 years clinical nursing experience group had more responsibility for emergency duties. No significant differences were found between the four groups with respect to their actual functions.

A comparison of OH nurses' previous experience with respect to their actual roles and actual functions was carried out using a series of logistic regression tests. The results are given in *Table 6.11* and *Table 6.12.* The previous clinical experiences were retrospectively divided into three groups to aid discussion: medicine (obstetrics, neurology, dermatology, paediatrics and geriatrics),

surgery (gynaecology, ophthalmology, orthopaedics, oncology, intensive care, theatres, negro-surgery and ear, nose and throat), and accident and emergency.

Table 11 shows which previous clinical experiences were significant for each actual role and illustrates the roles for which each clinical experience was seen as important. Thus it can be seen that significantly more nurses acting in the "emergency responsibility" and "health surveillance" roles reported past experience in both "surgery" and "accident and emergency". The most significant of these for both roles was "accident and emergency" ($P<0.001$). Significantly more nurses acting in a "health screening" and "environmental surveillance" roles reported past experience in all three areas. The most significant of these for those in a "health screening" role was surgery ($P<0.001$). Significantly less nurses acting in the "environmental surveillance", "education" and "management" roles reported surgical experience. The most significant absence for both those in "education" and "management" roles was "surgery" ($P<0.001$). Significantly less nurses acting in a "therapeutic role" reported past experience in both medicine and surgery; significantly less nurses in a "consultant" role reported past experience in both accident and emergency and surgery; and finally significantly less nurses in a "training" role reported experience in accident and emergency ($P<0.001$).

Table 6.12 shows which clinical experiences were significant for each actual function and illustrates the functions for which previous clinical experience was seen as important. Thus it can be seen that significantly more nurses with "provision of a routine treatment service", "emergency treatment", and "health education and promotion" functions reported previous surgical clinical experience; the most significant for those with the latter two functions was general "surgery" experience ($P<0.001$). For those nurses with "health supervision" and "assessment of exposure" functions, significantly more reported previous medical experience. Significantly more nurses with "record keeping" functions reported previous experience in all three areas; significantly more with "health screening" and "individual counselling" functions reported previous experience in both surgery and accident and emergency with the most significant being "surgery" ($P<0.001$) for those involved in the latter function. Significantly more nurses with "assisting with socio-psychological problems" functions reported both previous surgical and medical experience. Significantly less nurses with "assessment of the degree of exposure" and "occupational safety" functions reported previous experience in all three areas; the most significant for the former being accident and emergency ($P<0.001$) and surgery ($P<0.001$). Significantly less nurses with "rehabilitation and resettlement" functions reported previous surgical experience; significantly less with "record keeping" functions reported previous medical experience and significantly less nurses with "informing workers of health hazards" and "assisting workers with socio-psychological problems"

functions reported both previous accident and emergency and surgical experience. The absence of both these experiences was more significant (P<0.001) for those with "assisting workers with socio-psychological problems" functions.

Table 6.11 The influence of previously clinical experience on actual roles.

Actual roles	Accident /Emergency	Surgery	Operating theatre	Ear, Nose, Throat	Orthopae-dics	Ophthamo-logy	Gynaeco-logy	Medicine	Communo-sible disease	Dermatology
Health surveillance	1.07** a	1 08***						0.82**		
Health screening	1 35***			1.53**	0.81*					
Education	-0 80***	1 08***	-0 81*							
Emergency responsibility	0 75***		0 98**							
Therapeutic							-0 77*		-2 19*	
Training	-0 80***									
Environmental surveillance										1 7*
Consultant	-0 62**			-1 20**						
Management		-1 07***				-3 08**				
Research	-1 51*	-1 97***						-1 99***		

[a] Logistic regression test, regression coefficient, * P<0 05, ** P<0 01, *** P<0 001.

Table 6.12 The influence of previous clinical experience on actual functions.

Actual functions	Accident/ Emergency	Surgery	Operating theatre	Ear, Nose, Throat	Orthopae -dics	Ophthal-mology	Medicine	Geriatrics	Paedia-trics	Intensive care	Obstetrics	Derma-tology	OPD
Health screening	0 57* a	0 64**											
Health supervision of worker									1 07**				
Health education and promotion		0 96***											
Individual counselling	0 84**	0 95***											
Emergency treatment for accident						1 49**							
Routine treatment		0 98***			0 72*								
Record keeping	0 78**			0 93*			0 51*	0 86*	-1 07**				
Development & maintenance of records				0 77*									
Co-operation with outside agencies				-1 03***									
Informing workers of health hazards	-0 54*		-0 61*										
Occupational safety	-0 86**					-1 26*	-0 64**				-0 86*		
Assessment of exposure	-1.50***	-1 19***	-1.42*				-1.04**					1 84*	1.26*
Assisting with socio-psychological problems	-1 11***	-1 11***		-1.36*	-1 62**					1 08*			
Rehabilitation & resettlement					0.72*								
Immunisation	-0.63**			-0 77*									
Familiarisation with work environment													
First-aid training for workers					0 81**		-0 38*						
Meetings & communication													
General health surveillance													
Specific health surveillance													

[a] Logistic regression test, regression coefficient, * P<0.05, ** P<0 01, *** P<0 001

6.4.5 Community nursing experience

A comparison of actual roles and functions with respect to the community nursing experience groups of OH nurses was carried out using a series of Chi-square statistical tests. The results are given in *Table A 1.23* and *Table A 1.24.* (Appendix A1.) The two categories of community nursing experience groups were: nurses with community nursing experience and nurses with no community nursing experience. There were no significant differences for the two community nursing experience groups with respect to their actual roles and functions.

6.4.6 Occupational health nursing experience

A comparison of actual roles and functions with respect to two categories of OH nursing experience was carried out using a series of Chi-square statistical tests. The results are given in *Table A 1.25* and *Table A 1.26.* (Appendix A1.) The two categories were: nurses with less than 10 years of OH nursing experience, and nurses with 10 or more years of OH nursing experience.

In the majority of cases there was no significant difference for the clinical nursing experience groups and their actual roles. Only one role, the "management" role, was statistically significant with respect to the two OH nursing experienced groups (P=0.021). The more experienced group had more responsibility for management. The actual functions of OH nurses with respect to the two groups. Only one function, "immunisation", was statistically significant with respect to the two OH nursing experience groups (P=0.022). The more experienced group had more responsibility for immunisation.

6.5 The influence of occupational health nurses' perceptions and beliefs on actual roles and functions

6.5.1 Ideal roles of the occupational health nurse

A comparison of OH nurses' opinions regarding ideal roles with respect to their actual roles and functions, was carried out using a series of logistic regression tests. The results are given in *Table 6.13* and *Table 6.14*.

Table 6.13 shows which ideal roles were significant for each actual role and illustrate the actual roles for which ideal roles were seen as important. Thus it can be seen that significant numbers of nurses acting in "therapeutic", "emergency responsibility", "health surveillance", "health screening", "consultant", "education", "training" and "management" roles felt that their actual role as one of an OH nurses's ideal role ($P=0.001$ or $P<0.001$). The only discrepancies were found with respect to nurses working in "environmental surveillance" and "research" roles who did not perceive these as ideal roles.

Table 6.14 shows which ideal roles were significant for each actual function. It is instructive to consider the table as showing the actual functions for which each ideal role was seen as important. Thus it can be seen that significantly more nurses with "emergency treatment" and "record keeping" functions perceived a "health surveillance" role as ideal ($P<0.001$). Significantly more nurses with "provision of a routine treatment service" and "emergency treatment" functions perceived an "emergency responsibility" role as ideal ($P<0.001$). An "environmental surveillance" role was considered ideal by significantly more nurses with "health screening" and "health education and promotion" functions ($P<0.001$). Significantly less nurses with "occupational safety", "assisting workers with socio-psychological support" and "co-operation with outside agency" functions considered the "health surveillance" role as ideal ($P<0.001$). The "environmental surveillance role" was considered ideal by significantly less nurses with "provision of routine treatment" functions ($P<0.001$) and the "education" and "consultant" roles by significantly less nurses with "assessment of the degree of exposure" roles ($P<0.001$).

Table 6.13 The influence of ideal roles on actual roles.

Actual roles	Health screening	Health surveill-ance	Education	Emergency response	Thera-peutic	Training	Environ surveill-ance	Consultant	Manage-ment	Research
Health surveillance	1.24** [a]	1 02**							1.02*	
Health screening		1 42***								
Education			0 90***							
Emergency responsibility				2.85***				0.50*		
Therapeutic					1.40***		-0.54**			
Training				-0 66***	-0.69*	0 62*				
Environmental surveillance					-0.72*	-0 83**				
Consultant		-0 99***						0 95***	-0.95**	
Management		-1 33***	-0.64*						1.23***	
Research	-1.91**	-1 28*					-1.56**			

[a] Logistic regression test, regression coefficient, * P<0.05, ** P<0 01, *** P 0.001.

Table 6.14 The influence of ideal roles on actual functions.

Actual functions	Health screening	Health surveill-ance	Education	Emergency Response	Thera-peutic	Training	Environ surveill-ance	Consultant	Manage-ment	Research
Health screening							1 26***			
Health supervision of worker	0.55** [a]									
Health education & promotion							0.77***	0 69**		
Individual counselling		0 82**								
Emergency treatment for accident		0 69***		1.41***						
Routine treatment				1.12***		0.88**	-0.83**	0.68**		
Record keeping		0.95***								
Development & maintenance of records		0.40**								
Co-operation with outside agencies		-1.00***								
Informing workers of health hazards		-0 42*		-0.63*						
Occupational safety		-1 19***		-0.87*					-1 06**	
Assessment of exposure			-1.34***	-1.04*				-1.84***		
Assisting with socio-psychological problems		-1 68***			-1.36*					
Rehabilitation & resettlement	-0 59**				0.71*	-0.94**				0.85**
Immunisation			-0.50**	-0 57*						
Familiarisation with work environment										
First-aid training for workers										
Meetings & communication										
General health surveillance										
Specific health surveillance										

[a] Logistic regression test, regression coefficient, * P<0 05, ** P 0.01, *** P<0.001.

6.5.2 Ideal functions of the occupational health nurse

A comparison of OH nurses' opinions regarding ideal function with respect to their actual roles and functions, was carried out using a series of logistic regression tests. The results are given in *Table 6.15* and *Table 6.16*. The ideal functions were later divided into four categories to aid discussion: primary prevention (immunisation, familiarisation with work environment, informing workers of health hazards, occupational safety, individual counselling, assisting workers with psycho-sociological problems, health education and promotion, first-aid training for workers), secondary prevention (health supervision of workers, assessment of the nature and degree of exposure, general health surveillance, specific health screening, record keeping, health screening), tertiary prevention (provision of a routine treatment service, rehabilitation and resettlement, emergency treatment for accident and illness), and comprehensive (development and maintenance of records, meeting and communication, co-operation with outside agencies).

Table 6.15 shows which ideal functions were significant for each actual role and illustrate the actual roles for which each ideal function was seen as important. Thus it can be seen that significantly more nurses acting in the "emergency responsibility" role considered both tertiary and primary functions to be the ideal functions of OH nurses. Significantly more nurses acting in "health surveillance", "health screening" and "education" roles considered both secondary and primary to be the ideal functions of OH nurses and for those in the "health screening" and "education" role, "health screening", "assessment of the nature and degree of exposure", "individual counselling", and "informing workers of health hazards" were most significant ($P<0.001$). Significantly more nurses in a "health surveillance" role considered secondary prevention and in a "management" role considered primary were the ideal functions of OH nurses. Significantly less nurses in "therapeutic", "environmental surveillance", "consultant", "training", "management" and "research" roles considered certain ideal functions of OH nurses. Significantly less nurses in "therapeutic", "training", "management" and "research" roles considered both primary and secondary prevention as an ideal function and significantly less nurses in "environment surveillance", and "consultant" roles considered tertiary prevention as an ideal function; particularly significant with respect to "emergency treatment for accident" and "specific health surveillance" ($P<0.001$).

Table 6.16 shows which ideal functions were significant for each actual function and illustrate the actual functions for which each ideal function was seen as important. Thus it can be seen that all of the nurses felt that their actual function was consistent with an OH nurses' ideal functions ($P=0.001$ or $P<0.001$).

Table 6.15 The influence of ideal function on actual roles.

Actual roles	Health screening	Health education	Individual counsell -ing	Emergency treatment	Record keeping	Informing health hazards	Occupation -al safety	Assess- ment of exposure	Assisting problem	First-aid training	Special Health Surveill- ance
Health surveillance	1.98***		1.28***					1.63***			
Health screening	0.63*				0.63*					0.70*	0.72*
Education						0 85***			1.02*		
Emergency responsibility		0.40*		1.15***							
Therapeutic										-0.47*	
Training											-0.66***
Environmental surveillance				-0.77***							
Consultant				-0.77***		-0.59**					
Management	-0.69*	-0.57*		-0.72*	-0.66*		0.74*				
Research		-1.21*	-1.54**	-1.57*				-1.50*			

[a] Logistic regression test, regression coefficient, * P 0.05, ** P<0.01, *** P<0.001.

Table 6.16 The influence of ideal function on actual functions.

Actual functions	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20
(1) Health screening	1 40***								-0 85**	0 72**						0 67*				
(2) Health supervision of worker		1 72***		-0 86**																
(3) Health education /promotion			1.55***		-0 85**															
(4) Individual counselling				1.30***						0 64*		0.74*								-0.70*
(5) Emergency treatment for accident					1.57***															0.51*
(6) Routine treatment					0.72**	1.49**					-0 64*									
(7) Record keeping							1 77***													
(8) Development /maintenance records								0 98***	-0 75**								0 62*			
(9) Co-operation with outside agencies	-0.61*				-0.59*				1.27***	-0 68*				-0.98***						
(10) Informing worker health hazards			-1.38***							0 84**			0 76*							
(11) Occupational safety					-1 46***			-0.87**			1.89***							-1.14***		-0.96**
(12) Assessment of exposure			-1 11**	-0.85*					-1 48**			1.13**						-0.93*		
(13) Assisting with socio -psychological problems		-0 72*		-1.08**	-0.87*			-0 83*					1 48***							
(14) Rehabilitation & resettlement					-0.78**					-0 86**				1 44***				-0 62*		
(15) Immunization													-1 01*	-0.73**	2.63***			-0.56*		
(16) Familiarization work environment										-0 52*						0 71***				
(17) First-aid training for workers			-0 96***							0 57*							1.28***			
(18) Meetings & communication					-0.69**													0 77***		
(19) General health surveillance			-0 45*								-0.82**								1 14***	
(20) Specific health surveillance		-0 61**									-0 80**									1 2****

[a] Logistic regression test, regression coefficient, * P<0.05, ** P<0 0 *** P<0 001

6.5.3 Definition of occupational health nursing

A comparison of actual roles and functions with respect to four definitions of OH nursing groups was carried out using a series of Chi-square statistical test. The results are given in *Table A1.27* and *Table A1.28.* (Appendix A1.) Responses were divided into four definition categories. The first category was the AAOHN's definition, the second category was the ANA's definition, the third category was the RCN's definition, and the fourth category was for other definitions.

The Chi-square test was used to compare the actual roles of OH nurses with respect to the four categories of definition, and for the majority of the roles, no statistically significant differences were found. Only two roles, "emergency responsibility" (P=0.006) and "environment surveillance" (P=0.026) were statistically significant with respect to the four definition categories. Those respondents choosing the AAOHN's definition had a greater emergency responsibility role. Those respondents choosing "other definitions" had a greater environment surveillance role.

The functions of OH nurses with respect to the four categories of OH nursing definition were compared. For the majority of functions no significant differences were found. Only two functions, "emergency treatment for accident and illness" (P=0.003), and "co-operation with outside agencies" (P=0.044), were statistically significant with respect to the four groups. Those choosing the RCN's definition had more responsibility for emergency treatment for accidents and illness. Those choosing the "other definition" had more responsibility for co-operation with outside agencies.

6.5.4 Definition of occupational health nurse

A comparison of actual roles and functions with respect to four "definition of OH nurse" groups was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.29* and *Table A1.30.* (Appendix A1.) Responses were divided into four categories of definition as follows: the ICOH-NC's definition, the AAOHN's definition, the USDL's definition, and the "other definitions".

The Chi-square test was used to compare the actual roles of OH nurses with respect to choice of definition. Four roles, "emergency responsibility" (P=0.017), "environment surveillance" (P=0.048), "management" (P=0.041), and "research" were statistically significant with respect to the definitions chosen by respondents. Those choosing the USDL's group had greater emergency responsibility role. Those choosing "other definitions" had more responsibility for environment surveillance, management, and research roles.

The relationship between functions of OH nurses and choice of definition. Only three functions, "provision of a routine treatment service" (P=0.017), "emergency treatment for accident and illness" (P=0.005), and "rehabilitation and resettlement" (P=0.049), were statistically significant with respect to the four categories of definition. Those choosing the USDL's definition had more responsibility for the provision of a routine treatment service and emergency treatment for accident and illness. Those choosing "other definitions" had more responsibility for rehabilitation and resettlement.

6.5.5 Characteristics of the occupational health nurse

A comparison of OH nurses' perceptions of ideal OH nurses' characteristics, with respect to their own actual roles and functions was carried out using a series of logistic regression tests. The results are given in *Table 6.17* and *Table 6.18*. The characteristics were later divided into two categories to aid discussion: personality characteristics (independence, intelligence, a sense of humour, maturity, empathy and an enquiring and challenging mind) and skills (good communication skills, well developed and effective inter-personal skills, good management skills, good basic nursing skills, taking on problems and solving them, and efficiency).

Table 6.17 shows which characteristics were significant for each actual role, and illustrates the actual roles for which each characteristic was seen as important. Thus it can be seen that significantly more nurses acting in the "emergency responsibility", "health screening" and "education" roles considered both personality and skills to be essential OH nurses' characteristics. Significantly more nurses acting in "health surveillance" and "management" roles considered skills to be ideal characteristics and for those in a health surveillance role, "good communication skills" were most significant (P<0.001). Significantly more nurses in a "therapeutic" role considered personality characteristics ideal. Significantly less nurses in an "environmental surveillance", "consultant", "management" and "research" roles considered certain personality characteristics and skills as ideal for OH nurses. Significantly less nurses in a "therapeutic" role considered skills ideal and significantly less nurses in a "training" role considered personality characteristics ideal, particularly significant with respect to "empathy" (P<0.001). For those nurses in a "research" role the personality characteristic, "an enquiring and challenging mind" was most significant in that it was not mentioned (P<0.001) and for those in a "consultant" role the communication and inter-personal skills were most significant in their absence (P<0.001).

Table 6.18 shows which characteristics were significant for each actual function, and illustrates the actual functions for which each characteristic was seen as important. Thus it can be seen that significantly more nurses with "emergency treatment", "record keeping", "health screening" and

"health education and promotion" functions considered both personality and skills to be essential OH nurse characteristics. Significantly more nurses with "provision of a routine treatment service", "health supervision", "specific health surveillance" and "individual counselling" functions considered certain skills to be essential OH nurses' characteristics; the most significant of these were "good basic nursing skills" ($P<0.001$), "good communication skills" ($P<0.001$) and "well developed, effective interpersonal skills" ($P<0.001$) respectively. Significantly less nurses with "assessment of exposure", "specific health surveillance", "informing workers of health hazards" and "occupational safety" functions considered certain both personality and skill characteristics as essential for OH nurses. For those with "assessment of exposure", "informing workers of hazards" and "occupational safety" functions, the absence of skill characteristics were most significant; "well developed interpersonal skills" ($P<0.001$) for the former and "good communication skills" ($P<0.001$) for the two latter functions. Significantly less nurses with "rehabilitation", "general health surveillance", "assisting workers with socio-psychological" and "co-operation with outside agencies" functions considered skill characteristics as essential; the most significant of these being "good communication skills" ($P<0.001$) for those with the latter two functions. Personality characteristics were significantly not mentioned by those with "immunisation" functions.

Table 6.17 The influence of characteristics of OH job on actual roles.

Actual roles	Personality					Skill					
	Empathy	Challeng-ing mind	Intelli-gence	Maturity	Sense of number	Commun-cation skill	Problem solving	Inter-person skill	Manage-ment skill	Nursing skill	Efficien-cy
Health surveillance		0.77* [a]	1.52*			0.92**	1.24*	0.61*			
Health screening						1.10***		0.72**			
Education					0.87**	0.50**					
Emergency responsibility		0.69**								0.87**	0.96**
Therapeutic	0.62*					-0.52**					
Training	-1.21***										
Environmental surveillance				-0.63*						-0.68**	
Consultant		-0.83***								-0.52*	-0.84**
Management		-0.93**				-0.57*	-0.86*	-0.58*	0.82*	-1.00**	
Research		-1.62*				-2.33***		-1.52***			

[a] Logistic regression test, regression coefficient, * P<0.05, ** P<0.01, *** P<0.001.

Table 6.18 The influence of characteristics of OH job on actual functions.

Actual functions	Personality						Skill				
	Empathy	Challeng-ing mind	Intelli-gence	Maturity	Sense of humour	Independ-dent	Commun-cation skill	Inter-person skill	Manage-ment skill	Nursing skill	Efficien-cy
Health screening					0.55* [a]		0.61**				0.82*
Health supervision of worker							0.59***				
Health education & promotion						0.84**		0.48*	0.65*		
Individual counselling							0.63**	0.47*	0.64*		
Emergency treatment for accident	0.70*			0.86*						0.99**	0.92**
Routine treatment										0.98***	
Record keeping	0.81*	0.59*					0.49*				
Development & maintenance of records							0.48**				
Co-operation with outside agencies							-0.67***	-0.68**			
Informing workers of health hazards			-0.81*				-0.58***				
Occupational safety		-1.00**					-1.16***				-0.78*
Assessment of exposure		-1.07**					-0.74**	-1.08***			-1.08*
Assisting with socio-psychological problems							-1.02***	-1.84**		-0.90*	
Rehabilitation & resettlement										-0.59*	
Immunisation		-0.72**	-0.91**								
Familiarisation with work environment											
First-aid training for workers											
Meetings & communication											
General health surveillance								-0.36*			
Specific health surveillance			-0.69*				-0.46*	0.99***			

[a] Logistic regression test, regression coefficient, * P<0.05, ** P<0.01, *** P<0.001.

6.5.6 Occupational health nursing - a speciality

A comparison of OH nurses' perceptions of the element of speciality, with respect to their own actual roles and functions, was carried out using a series of logistic regression tests. The results are given in *Table 6.19* and *Table 6.20*. The elements of speciality were retrospectively divided into three categories to aid discussion: prevention (preventing diseases and injuries, a preventative, health promoting speciality, working with healthy people), working environment (working in the employees' workplace, part of a more multi-disciplinary team), and recognition of OH nursing as a speciality (not within the scope of nursing as it is usually understood by the public).

Table 6.19 shows which elements of speciality were significant for each actual role. It is instructive to consider the table as showing the actual roles for which each element was seen as important. Thus it can be seen that significantly more nurses acting in the "emergency responsibility" role considered both prevention and recognition to be the element of speciality. Significantly more nurses acting in "health surveillance", "health screening" and "education" roles considered prevention to be the element of speciality and for those in the "health screening" and "education" role, both a "preventative, health promoting speciality" and "working with healthy people" were most significant ($P<0.001$). Significantly more nurses in a "health surveillance" role considered that prevention was an element of speciality. Significantly less nurses in an "emergency responsibility", "environmental surveillance", "consultant", "training", "management" and "research" roles considered certain elements of speciality. Significantly less nurses in an "emergency responsibility" and "research" role considered recognition element and significantly less nurses in an "environment surveillance", "consultant", "training", "management", and "research" role considered prevention as a element of speciality; particularly significant with respect to "it is a preventative, health promoting speciality" and "working with healthy people" ($P<0.001$).

Table 6.20 shows which elements of speciality were significant for each actual function. It is instructive to consider the table as showing the actual functions for which each element was seen as important. Thus it can be seen that significantly more nurses with "health screening", "individual counselling" and "health education and promotion" functions considered preventative elements as being a speciality; the most significant of these was "a preventative, health promoting speciality" ($P<0.001$) with the former group and "working with healthy people" ($P<0.001$) for the latter two groups. Significantly more nurse with "provision of a routine treatment service", "health supervision of workers" and "familiarisation of the working environment" functions considered recognition as being a speciality; the most significant elements being "isolation from the main stream of nursing and other professionals" ($P<0.001$) for the former and "not within the scope of

nursing as it is usually understood by the public" (P<0.001) for the two latter groups. Significant numbers of those with "emergency treatment" functions considered both recognition and preventative elements as being a speciality and significantly more nurses with "record keeping" functions considered both working environment and recognition as being elements of speciality. Significantly less nurses with "provision of a routine treatment", "rehabilitation", and "immunisation" functions considered recognition elements as being a speciality; the most significant of these being "not within the scope of nursing as it is usually understood by the public" (P<0.001) for those with "immunisation" functions. Significantly less nurses considered with "assessment of exposure" and "occupational safety" functions considered both work environment and preventative elements of speciality with the most significant being "working with healthy people" (P<0.001) and "part of a more multi-disciplinary team" (P<0.001) for the former group. Significantly less numbers of those with "informing workers of health hazards" functions considered work environment elements as being a speciality (P<0.001) and less of those with "assisting workers with socio-psychological problems" functions considered all three categories as being elements of a speciality.

Table 6.19 The influence of element of speciality on actual roles.

Actual roles	Prevention			Working Environment		Recognition	
	Healthy people	Preventing diseases	Health promotion	Employees' workplace	Multi-displinary team	Isolation from Nursing	Misunderstood by the public
Health surveillance	1.24*** [a]		1.19***				
Health screening	0.71*	0.65*					
Education			0.83***				
Emergency responsibility		0.80**				1.00**	-0.61*
Therapeutic							
Training	-1.05***			0.63*			
Environmental surveillance	-0.40**						
Consultant			-0.83***				
Management	-0.62*			-0.86***			
Research	-1.35**	-1.38**			-1.78**		

[a] Logistic regression test, regression coefficient, * P<0.05, ** P<0.01, *** P<0.001.

Table 6.20 The influence of element of speciality on actual functions.

Actual functions	Prevention			Working Environment		Recognition	
	Healthy people	Preventing diseases	Health promotion	Employees' workplace	Multi-displinary team	Isolation from nursing	Misunderstood by the public
Health screening			1.05***				0.63***
Health supervision of worker							
Health education & promotion	1.02*** [a]						
Individual counselling	0.94***						
Emergency treatment for accident	0.58*				0.68*		
Routine treatment						0.90***	
Record keeping						0.76**	0.58*
Development & maintenance of records				0.49**			
Co-operation with outside agencies		-1.02***					
Informing workers of health hazards				-0.61***			
Occupational safety	-0.85**			-0.73*			
Assessment of exposure	-1.21***				-1.21***		
Assisting with socio -psychological problems		-0.87**		-0.68*			-0.64*
Rehabilitation & resettlement						-0.45**	
Immunisation							-0.86***
Familiarisation with work environment							0.36*
First-aid training for workers							
Meetings & communication							
General health surveillance							
Specific health surveillance							

[a] Logistic regression test, regression coefficient, * P<0 05, ** P<0.01, *** P 0.001.

6.5.7 Uniqueness of occupational health nursing

A comparison of OH nurses' perceptions of the uniqueness of OH nursing, with respect to their own actual roles and functions was carried out using a series of logistic regression tests. The results are given in *Table 6.21* and *Table 6.22*. The uniqueness of OH nursing was retrospectively divided into four categories to aid discussion: prevention (preventing ill health and injury in the workplace, providing health surveillance and maintenance of health), promotion (promoting health in the workplace and community, improving working condition), working environment (providing health care in an environment dedicated to production and profit, having the opportunity to directly influence decision makers), and professional (possessing a wide and varied knowledge base, having the opportunity to establish a long term relationship with a population).

Table 6.21 shows which unique qualities were significant for each actual role and illustrates the actual roles for which each quality was seen as important. Thus it can be seen that significantly more nurses acting in the "emergency responsibility" and "education" role considered both prevention and working environment to be the unique qualities. Significantly more nurses acting in "health surveillance", "health screening", and "education" roles considered both prevention and promotion to be unique for OH nursing and for those in the "health surveillance" and "education" role, both "preventing ill health and injury in the workplace" and "providing health care in an environment dedicated to production and profit" were most significant ($P<0.001$). Significantly less nurses in an "emergency responsibility" and "management" role considered working environment to be a unique quality and significantly less nurses in an "environment surveillance" and "training" roles considered "professional" to be a unique quality. Significantly less nurses in a "consultant", "management", and "research" role considered prevention to be a unique quality particularly with respect to "providing health surveillance and maintenance of health" and "preventing ill health and injury in the workplace" ($P<0.001$).

Table 6.22 shows which unique qualities were significant for each actual function and illustrates the actual functions for which each quality was seen as being important. Thus it can be seen that significantly more nurses with "provision of routine treatment service" and "development and maintenance of records" functions considered professional qualities as being unique to OH nursing; the most significant of these being "having the opportunity to establish a long term relationship with a population" ($P<0.001$) amongst the former group. Significantly more nurses with "emergency treatment" functions considered prevention qualities unique; more nurses with "health supervision" and "familiarisation with working conditions" functions considered promotion qualities unique; more nurses with "record keeping" functions considered both working environment and prevention qualities unique with the most significant being "preventing ill health

and injury in the workplace" (P<0.001) and significantly more nurses with "health screening" functions considered both preventative and promotion qualities as being unique; the most significant being "providing health surveillance and maintenance of health" (P<0.001). Significantly less nurses with "occupational safety" and "co-operation with outside agencies" functions considered both promotion and work environment qualities as unique; the most significant of these being "promoting health in the workplace" (P<0.001) for those in the latter group. Significantly less of those with "rehabilitation" functions considered prevention qualities unique (P<0.001); less of those with "immunisation" functions considered both prevention and promotion qualities unique and significantly less with "assessment of the degree of exposure" functions considered both work environment, promotion and prevention qualities as unique; the most significant being "promoting health in the workplace" (P<0.001) and "providing health care in an environment dedicated to production and profit" (P<0.001).

Table 6.21 The influence of perceived unique quality of OH nursing on actual roles.

Actual roles	Prevention		Promotion		Working Environment		Professional	
	Preventing ill health and injury	Health surveillance	Promoting health	Improving working condition	Health care in the workplace	Influence decision makers	Long-term r ship with population	Varied knowledge
Health surveillance	0.82* [a]	1.11**	0.93**					
Health screening	1.02***						0.92**	
Education		0.44*			0 81***			
Emergency responsibility		0.92***					0.68**	
Therapeutic						-0.44*		
Training							-0.55**	
Environmental surveillance							-0.63**	
Consultant		-1.13**						
Management	-0 65*	-0.72*			-0.93**			
Research	-2.41***		-1.34**	-1.38*				

[a] Logistic regression test, regression coefficient, * P<0.05, ** P<0.01, *** P<0.001.

Table 6.22 The influence of perceived unique qualities of OH nursing on actual functions.

Actual functions	Prevention		Promotion		Working Environment		Professional	
	Preventing ill health and injury	Health surveillance	Promoting health	Improving working condition	Health care in the workplace	Influence decision makers	Long-term r ship with population	Varied knowledge
Health screening		0.82*** [a]	0.53*					
Health supervision of worker			0.50**					
Health education & promotion					0.73**	0.99***		
Individual counselling			0.86***				0.63*	
Emergency treatment for accident	0.76**	0.68*						
Routine treatment							0.72***	
Record keeping	0.80***				0.59*			
Development & maintenance of records							0.64**	
Co-operation with outside agencies			-0.83***		-0.71**			
Informing workers of health hazards				-0.68**				-0.65**
Occupational safety		-0.74**	-0.80**		-0.94**			
Assessment of exposure			-1.31***		-1.31***			
Assisting with socio -psychological problems	-1.53***			-1.12**				
Rehabilitation & resettlement		-0.65***						
Immunisation	-0 45**			-0.49*				
Familiarisation with work environment				0.44*				
First-aid training for workers								
Meetings & communication								
General health surveillance								
Specific health surveillance								

[a] Logistic regression test, regression coefficient, * P<0 05, ** P<0.01, *** P<0 001.

6.6 Factors in the working environment influencing actual roles and functions

6.6.1 Type of organisation

A comparison of actual roles and functions with respect to two types of practising groups of OH nurses was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.31* and *Table A1.32.* (Appendix A1.) The types of practice were retrospectively divided into two groups to aid discussion: industry and non-industry.

A series of Chi-square tests was used to compare the actual roles of OH nurses with respect to two type of practising groups. The four roles, "emergency responsibility" ($P<0.001$), "health screening" ($P=0.011$), "management" ($P<0.001$) and "research" ($P=0.027$), were statistically significant with respect to the two types of practising groups, in that the industry group had more responsibility for emergency responsibility and health screening roles, and the non-industry group had more responsibility for management and research roles.

The actual functions of OH nurses was compared with respect to two types of practising groups. Four functions, "provision of a routine treatment service" ($P=0.032$), "emergency treatment for accident and illness" ($P<0.001$), "occupational safety" ($P=0.025$), and "meeting and communication", were statistically significant with respect to the two types of practising groups, in that the industry group had more responsibility for provision of a routine treatment service and emergency treatment for accident and illness, and the non-industry group had more responsibility for occupational safety and meeting and communication.

6.6.2 Number of employees

A comparison of actual roles and functions with respect to the "number of employees" was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.33* and *Table A1.34.* (Appendix A1.) The number of employees were retrospectively divided into three groups to aid discussion: employee numbers less than 1,000, 1,000-4,999 and 5,000 or over.

A series of Chi-square tests were used to compare the actual roles of OH nurses with respect to the "number of employees". For three roles, "emergency responsibility role" ($P<0.001$), "management role" ($P<0.001$), and "environment surveillance" ($P=0.004$), there were statistically significant differences with respect to the "number of employees". The respondent working for smallest organisation showed more responsibility towards the emergency role, the organisation employing between 1,000-4,999 showed more responsibility for the management role and the largest organisation indicated more responsibility for environment surveillance.

The actual functions of OH nurses with respect to the size of the organisation. With respect to the actual functions and three number of employees groups there was a trend for the smaller group to have significantly more responsibility for provision of a routine treatment service, emergency treatment for accident and illness and record keeping, and the bigger group to have significantly more responsibility for individual counselling and meeting and communication. The number of employees 1,000-4,999 group had more responsibility for general health surveillance.

6.6.3 Importance of occupational health department

A comparison of actual roles and functions with respect to the perceived importance of OH department was carried out using a series of Chi-square statistical test. The results are given in *Table A1.35* and *Table A1.36.* (Appendix A1.) The "importance of OH department" was retrospectively divided into three groups to aid discussion: low priority, essential and totally essential. A series of Chi-square tests was used to compare the actual roles and functions of OH nurses with respect to three "importance of OH department" groups, and no significant differences were found.

6.6.4 Policy for occupational health

A comparison of actual roles and functions with respect to existing OH policy was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.37* and *Table A1.38.* (Appendix A1.) Responses were divided into two categories to aid discussion: OH policy exists and no OH policy exists.

A series of Chi-square tests was used to compare the actual roles of OH nurses with respect to the two OH policy groups Two roles, "therapeutic" ($P<0.001$) and "health screening" ($P=0.043$), were statistically significant with respect to the two OH policy groups; in that the "no OH policy" group had more responsibility for a therapeutic role and the OH policy group had more responsibility for a health screening role. The actual functions of OH nurses with respect to the two OH policy groups. Only two functions, "health screening" ($P=0.049$), and "occupational safety" ($P=0.006$), were significantly different with respect to the two OH policy groups; in that the "OH policy" group had more responsibility for health screening, and the "no OH policy" group had more responsibility for occupational safety.

A comparison of the components in OH nurses' organisational policies, with respect to their own actual roles and functions, was carried out using a series of logistic regression tests. The results are given in *Table 6.23* and *Table 6.24.* The components were later divided into two categories to aid discussion: intrinsic (philosophy/mission statement, inter-relationship with the community,

ethical/legal aspects of practice, health and environment relationships) and specific (organisational chart/company description, goals and specific measurable objectives, scope of health services organisation, job descriptions, protocols appropriate to cover emergency situations, and administration procedures).

Table 6.23 shows which policy components were significant for each actual role and illustrates the actual roles for which each component was seen as important. Thus it can be seen that significantly more nurses acting in "emergency responsibility", "health surveillance", "health screening" and "education" roles reported specific components within their organisations' OH policy. The most significant components reported by those in an "emergency" and "education" roles were specific; "protocols appropriate to cover emergency situations" ($P<0.001$) and "scope of health services organisation, staffing and programme" ($P<0.001$) respectively. Significantly more nurses in a "consultant" role reported internal components and more nurses in a "health surveillance" role reported both specific and internal components. Significantly less nurses in "therapeutic", "environmental surveillance", "consultant", "training", "management" and "research" roles reported specific components within their organisational OH policy. The most significant of these was the omission of "administration procedures" ($P<0.001$) within the "research" role. Significantly less nurses in "health surveillance" and "emergency responsibility" roles reported internal components within their organisational OH policy.

Table 6.24 shows which OH policy components were significant for each actual function and illustrates the actual functions for which each component was seen as important. Thus it can be seen that significantly more nurses with "emergency treatment", "record keeping", "health screening", "individual counselling" and "health education and promotion" functions reported specific OH policy components. The most significant of these were "protocols appropriate to cover emergency situations" ($P<0.001$), "administration procedures" ($P<0.001$) and "goals and specific measurable objectives" ($P<0.001$) for each group respectively. Significantly more nurses with "health supervision" functions reported internal OH policy components; "inter-relationship with the community" ($P<0.001$). Significantly less OH nurses with "assessment of exposure", "informing workers of health hazards", "occupational safety" and "co-operation with outside agencies" functions reported specific OH policy components; the most significant within each group were "job description" ($P<0.001$), "protocols appropriate to cover emergency situations" ($P<0.001$), "job description" ($P<0.001$) and "administration procedures" ($P<0.001$) respectively.

Table 6.23 The influence of OH policy on actual roles.

Actual roles	Company		Service				Personnel	Relationship	
	Philosophy /Mission	Ethical /legal aspect	Goals objectives	Health service	Emergency situation	Administra -tion procedures	Job description	Inter-r/ship with community	Health & environ -ment r/ship
Health surveillance				1.18* [a]		0.94*	1.20**		
Health screening			0.97*		0 85*	1.01*			
Education				0.99***					
Emergency responsibility	-0 61*				1.52***				-0.76**
Therapeutic									
Training						-0.39*			
Environmental surveillance					-0 57**				
Consultant		1.13*				-0.91**			
Management					-0 91**		-0 83**		
Research						-1.86***	-1 94**		

[a] Logistic regression test, regression coefficient, * P<0.05, ** P 0.01, *** P 0.001.

Table 6.24 The influence of OH policy on actual functions.

Actual functions	Company		Service				Personnel	Relationship	
	Philosophy /Mission	Orgaanisa- tion chart	Goals/ objectives	Health service	Emergency situation	Administra -tion procedure	Job description	Inter-r/ship with community	Health & environ -ment r ship
Health screening						1.22***			
Health supervision of worker								1.05***	
Health education & promotion			0.99***						
Individual counselling						0.98***			
Emergency treatment for accident					1.27***				
Routine treatment			-0.77* [a]		0.89**				
Record keeping						0 87***			
Development & maintenance of records							0 58**		
Co-operation with outside agencies						-1.06***			
Informing workers of health hazards					-0 96***				
Occupational safety	-0.97**						-1.59***		
Assessment of exposure				-1.36**			-1 50***		
Assisting with socio -psychological problems					-1.29**	-0 96**			
Rehabilitation & resettlement									
Immunisation						-0.59**			
Familiarisation with work environment			0.58*						
First-aid training for workers		0.79**						-1 11**	
Meetings & communication									
General health surveillance									
Specific health surveillance									

[a] Logistic regression test, regression coefficient, * P<0 05, ** P<0.01, *** P<0.001.

6.6.5 Policy for occupational health nursing

A comparison of actual roles and functions with respect to two OH nursing policy groups of OH nurses was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.39* and *Table A1.40.* (Appendix A1.) The responses were retrospectively divided into two groups to aid discussion: those with an existing OH nursing policy and those with no OH nursing policy.

A series of Chi-square tests was used to compare the actual roles of OH nurses with respect to the two OH nursing policy groups. Only one role, "therapeutic" role (P=0.007), was statistically significant with respect to the two OH nursing policy groups; in that the "no OH policy group" had more responsibility for therapeutic role. The actual functions of OH nurses with respect to two OH nursing policy groups. Only two functions, "provision of a routine treatment service" (P=0.037), and "health supervision of workers" (P=0.042), were statistically significant different with respect to the two OH nursing policy groups. The OH nursing policy group had more responsibility for health supervision of workers, and the no OH nursing policy group had more responsibility for provision of a routine treatment service.

A comparison of the components in OH nursing policies, with respect to actual roles and functions, was carried out using a series of logistic regression tests. The results are given in *Table 6.25* and *Table 6.26.* The components were later divided into three categories to aid discussion: personnel (written job descriptions, written professional and para-professional staff requirement, written policies regarding staff meeting, development opportunities, and clearly delineated staffing patterns); budget (budgets for the nursing component as well as the overall OH program) and skill (individual general written instructions for extended nursing skills).

Table 6.25 shows which OH nursing policy components were significant for each actual role and illustrates the actual roles for which each component was seen as important. Thus it can be seen that significantly more nurses acting in "emergency responsibility", "health surveillance", "health screening" and "education" roles reported specific components within their organisation"s OH policy. The most significant components reported by those in an "emergency", "health surveillance" and "health screening" roles were personnel; "written job descriptions" (P<0 001). Significantly more nurses in a "health screening" and "education" role reported personnel components. Significantly less nurses in "therapeutic", "environmental surveillance", "consultant", "training", "management" and "research" roles reported personnel components within their organisational OH nursing policy. The most significant of these was the omission of "written job descriptions" (P<0.001) within the "consultant", "management" and "research" role. Significantly

less nurses in "therapeutic", "health surveillance", "training" and "research" roles reported personnel components within their organisational OH policy.

Table 6.26 shows which OH nursing policy components were significant for each actual function and illustrates the actual functions for which each component was seen as important. Thus it can be seen that significantly more nurses with "emergency treatment", "record keeping", and "individual counselling" functions reported personnel components with "written job descriptions" being the most significant in all ($P<0.001$). Significantly more OH nurses with "health education and promotion" functions reported budget components of the OH nursing policy; the most significant was "budgets for the nursing component as well as the overall OH programme" ($P<0.001$). Significantly less nurses with "assessment of the degree of exposure", "immunisation", "informing workers of health hazards", "occupational safety" and "co-operation with outside agencies" functions reported personnel components in the OH nursing policy; the most significant of these for all was "written job description" ($P<0.001$).

Table 6.25 The influence of OH nursing policy on actual roles.

Actual roles	Personnel			
	Staff meeting development opportunities	Job description	Professional and para-professional requirement	Staffing pattern
Health surveillance		1.53*** [a]	1.21**	
Health screening		1 11***		
Education			0.74**	
Emergency responsibility		1 03***		
Therapeutic	-1.99**			
Training		-0 41*		
Environmental surveillance			-0.46*	
Consultant		-0 72***		
Management		-1 20***		
Research		-2.89***	-1 63**	1.86*

[a] Logistic regression test, regression coefficient, * P<0.05, ** P<0 01, *** P<0.001.

Table 6.26 The influence of OH nursing policy on actual functions.

Actual functions	Personnel				Skill	
	Staffing meeting development opportunities	Job description	Professional & para-professional requirement	Staffing pattern	Nursing budgets	Extended nursing skill
Health screening			1.10*** [a]			
Health supervision of worker			0.74**			
Health education & promotion					1.35***	
Individual counselling		0.88***				
Emergency treatment for accident		0.92***				
Routine treatment						
Record keeping		0.84***				
Development & maintenance of records	0.81*					-2.20*
Co-operation with outside agencies		-1.04***				
Informing workers of health hazards		-0 73***				
Occupational safety		-1.73***				
Assessment of exposure	-1.47*	-1.57***				
Assisting with socio -psychological problems		-0.87**	-0.91*			
Rehabilitation & resettlement						
Immunisation		-0.49**				
Familiarisation with work environment			0.51*			
First-aid training for workers						
Meetings & communication						
General health surveillance						
Specific health surveillance						

[a] Logistic regression test, regression coefficient, * P<0.05, ** P<0.01, *** P<0.001.

6.6.6 Equipment and facilities used in the occupational health department

A comparison of OH nurses' equipment and facilities, with respect to their actual roles and functions, was carried out using a series of logistic regression tests. The results are given in *Table 6.27* and *Table 6.28*. The equipment and facilities were later divided into three categories to aid discussion: treatment equipment (equipment for vision tests, audiometric tests, stress tests, X-ray radiography), treatment facilities (treatment room, rest area with bed, physiotherapy room, laboratory), educationally orientated facilities (private area for health education, conference room and library), and space (waiting room, offices for doctors and nurses, storage room, changing room and toilet and shower).

Table 6.27 shows which equipment and facilities were significant for each actual role and illustrates the actual roles for which equipment and facilities was seen as important. Thus it can be seen that significantly more nurses acting in an "emergency responsibility" role reported treatment orientated facilities; "separate treatment room" ($P<0.001$). Significantly more nurses acting in a "health screening" role reported both treatment orientated facilities and space; the most significant being "equipment for a vision test" ($P<0.001$). Significantly more nurses in "health surveillance" and "education" roles reported space ; "an office for the nurse" ($P<0.001$) and toilet/shower ($P<0.001$) respectively. Significantly more nurses in a "research" role reported educational facilities. Significantly less nurses in "therapeutic" and "environmental surveillance" roles reported treatment orientated facilities; for those in an "environmental surveillance" role the most significantly undermentioned was a "separate treatment room" ($P<0.001$). Significantly less nurses in a "consultant", "training", "management" and "research" role reported space facilities; the most significant of these for each were "toilet/shower" ($P<0.001$) for those in a "consultant" role , and "office for nurses" ($P<0.001$) for those in a "research" role.

Table 6.28 shows which equipment and facilities were significant for each actual function and illustrates the actual functions for which equipment and facilities were seen as important. Thus it can be seen that significantly more nurses with "provision of a routine treatment service", "emergency treatment" and "development and maintenance of records" functions reported treatment orientated space; a "separate treatment room" was most significant ($P<0.001$) for those with "provision of a routine treatment service" and "development and maintenance of records" functions. Significantly more nurses with "record keeping", "individual counselling" and "health education and promotion" functions reported space; the most significant for each of these groups were "office for a nurse" ($P<0.001$), "waiting room" ($P<0.001$) and "office for a nurse" ($P<0.001$) respectively. Significantly more respondents with "health supervision" and "health screening" functions reported equipment; the most significant of these being "equipment for a vision test"

(P<0.001) for the latter group. Significantly less OH nurses with "immunisation" and "co-operation with outside agencies" functions reported space; in both these groups the most significantly under reported was "office for a nurse" (P<0.001). Significantly less nurses with "informing workers of health hazards" functions reported equipment and space, the most significant of theses being "toilet/shower" (P<0.001); less nurses with "occupational safety functions reported treatment and education orientated space, both significant at (P<0.001); and less of those with "assisting with socio-psychological problems" functions reported both equipment and treatment; the most significantly under reported being "equipment for a vision test" (P<0.001).

Table 6.27 The influence of equipment and facilities on actual roles.

Actual roles	Equipment		Treatment			Education	Space		
	Vision test	Stress test	Treatment room	Rest area with bed	Laboratory room	Conference area	Office(s) for nurse(s)	Waiting room	Toilet/ Shower
Health surveillance	1.47*** a							0.99**	
Health screening							1.21***		
Education									0.64***
Emergency responsibility			1.26***						
Therapeutic		-1.28*							
Training					1.02*		-0.48**		
Environmental surveillance			-0.64***						-0.85***
Consultant									
Management	-0.95***			-0.66*					
Research				-1.93**		2.51**	-3.06***		

[a] Logistic regression test, regression coefficient, * P<0.05, ** P<0.01, *** P<0.001

Table 6.28 The influence of equipment and facilities on actual functions.

Actual functions	Equipment				Treatment			Education		Space				
	Vision test	Stress test	X-ray test	Anthropometric	Treatment room	Rest area with bed	Physiotherapy	Conference room	Library	Office for nurse	Waiting room	Toilet/ Shower	Changing room	Storage room
Health screening	1.07** a													
Health supervision of worker				0.54**										
Health education & promotion										1.34***				-0.64*
Individual counselling		1.32*	-1.49*								1.21***			
Emergency treatment for accident					0.92**	0.79**	1.76*	-1.09*						
Routine treatment					1.25***				-0.87**					
Record keeping		-1.08*								1.00***				
Development & maintenance of records					0.56***									
Co-operation with outside agencies									0.73*	-1.10***			-0.95**	
Informing workers of health hazards		-1.39*										-0.64***		
Occupational safety					-1.10***				-1.34***					
Assessment of exposure					-1.30**					-1.16**				
Assisting with socio-psychological problems	-1.07***				-1.00**									
Rehabilitation & resettlement				-0.57**										
Immunisation										-0.53***				
Familiarisation with work environment														
First-aid training for workers														
Meetings & communication														
General health surveillance														
Specific health surveillance														

[a] Logistic regression test, regression coefficient, * P<0.05, ** P<0.01, *** P<0.001

6.7 The influence of the occupational health and safety team on actual roles and functions

6.7.1 Staff in the occupational health department

Nurses

A comparison of actual roles and functions with respect to three OH nurse unit groups was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.41* and *Table A1.42.* (Appendix A1.) The OH nurse were retrospectively divided into three groups to aid discussion: single nurse unit; two nurse unit; and multiple nurses unit.

A series of Chi-square tests was used to compare the actual roles and functions of OH nurses with respect to the three "nurse unit" groups. Two roles were found to be statistically significant: the "emergency responsibility" (P=0.014) and "health screening" (P=0.022). Significantly more of OH nurses in single nurse unit had "emergency responsibility" role, and significantly more of those in two nurse unit had a "health screening" role. The actual functions of OH nurses with respect to the three nurse unit groups. Only two functions, "emergency treatment for accident and illness" (P=0.025) and "individual counselling" (P=0.013), were statistically significant, in that the two nurse unit group had more responsibility for emergency treatment for accident and illness. and individual counselling.

Doctors

A comparison of actual roles and functions with respect to two "full-time doctor" groups of OH nurses were carried out using a series of Chi-square statistical tests. The results are given in *Table A1.43* and *Table A1.44.* (Appendix A1.) The sample was retrospectively divided into two groups to aid discussion: one group had a full-time doctor and the other had no full-time doctor.

A series of Chi-square tests was used to compare the actual roles and functions of OH nurses with respect to two full-time doctor groups. Only one role, the "emergency responsibility" (P=0.001), was statistically significant; in that OH nurses in departments with no full-time doctor had significantly more responsibility for emergency responsibility role. Only for one function, 'emergency treatment for accident and illness' (P=0.004), was significantly different with respect to the two groups; in that those OH nurses in department with no full-time doctor had more responsibility for emergency treatment for accident and illness functions.

Industrial hygienists

A comparison of actual roles and functions with respect to two 'full-time industrial hygienist' groups of OH nurses was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.45* and *Table A1.46.* (Appendix A1.) The industrial hygienist were retrospectively divided into two groups to aid discussion: one group had a full-time industrial hygienist and the other had no full-time industrial hygienist. A series of Chi-square tests was used to compare the actual roles and functions of OH nurses with respect to two full-time industrial hygienist groups, and there was found to be no significant differences.

Safety officers

A comparison of actual roles and functions with respect to two 'full-time safety officer' groups of OH nurses was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.47* and *Table A1.48.* (Appendix A1.) The safety officer were retrospectively divided into two groups to aid discussion: one group had a full-time safety officer and the other had no full-time safety officer.

A series of Chi-square tests was used to compare the actual roles and functions of OH nurses with respect to two full-time safety officer groups, and in the majority of cases no significant differences were found. Only two statistically significant differences were found and these were 'rehabilitation and resettlement' (P=0.035), and 'record keeping' (P=0.038) The full-time safety officer group had more responsibility for rehabilitation and resettlement, and these without a full-time safety officer had more responsibility for record keeping.

Managers

A comparison of actual roles and functions with respect to two 'full-time manager' groups of OH nurses was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.49* and *Table A1.50.* (Appendix A1.) The managers were retrospectively divided into two groups to aid discussion: one group had a full-time manager and the other had no full-time manager.

One statistically significant difference was "therapeutic" role (P=0.007). Those without a full-time manager had more responsibility for the therapeutic role. The actual functions of OH nurses with respect to two full-time manager groups, no significant differences were found.

Secretaries

A comparison of actual roles and functions with respect to two "full-time secretaries" groups of OH nurses was carried out using a series of Chi-square statistical tests. The results are given in *Table A 1.51* and *Table A 1.52.* (Appendix A1.) The respondents were retrospectively divided into two groups to aid discussion: one group had full-time secretaries and the other had no full-time secretaries.

A series of Chi-square tests was used to compare the actual roles and functions of OH nurses with respect to the two full-time secretaries groups. Only one role, "emergency responsibility" (P=0.003), was statistically significant with respect to the two full-time secretaries groups; in that OH nurses in departments with no full-time secretaries had more responsibility for the "emergency responsibility" role. For the majority of functions no significant differences were found. Only for two functions, "provision of a routine treatment service" (P=0.037), and "emergency treatment for accident and illness" (P=0.001), were there significant differences with respect to the two full-time secretaries groups; in that OH nurses in departments with no full-time secretaries had more responsibility for provision of a routine treatment service and emergency treatment for accident and illness.

6.7.2 Professional relationships

A comparison of actual roles and functions with respect to three "department relationship" groups of OH nurses was carried out using a series of Chi-square statistical tests. The results are given in *Table A 1.53* and *Table A 1.54.* (Appendix A1.) The department relationships were retrospectively divided into three groups to aid discussion: negative, neutral and positive relationship.

A series of Chi-square tests was used to compare the actual roles and functions of OH nurses with respect to three department relationship groups. With respect to the actual roles of OH nurses no statistically significant differences were found. Only one function, "meeting and communication" (P=0.037), was statistically significant with respect to the three department relationship groups; in that the more negative relationship group had significantly more responsibility for meeting and communication.

6.7.3 Relationships with team members

Medical officers

A comparison of actual roles and functions with respect to two "contact members with medical officers" groups of OH nurses was carried out using a series of Chi-square statistical tests. The

results are given in *Table A1.55* and *Table A1.56.* (Appendix A1.) The "contact members with medical officers" were retrospectively divided into two groups to aid discussion: one had contact members with medical officers and the other had no contact members with medical officers.

A series of Chi-square tests was used to compare the actual roles and functions of OH nurses with respect to two "contact members with medical officers" groups. Only two roles, "therapeutic" (P=0.044), and "emergency responsibility" (P=0.005), were there significantly different with respect to the two contact members with medical officers groups; in that the "no contact members with medical officers" group had more responsibility for therapeutic and emergency responsibility role. Only one function, "immunisation" (P=0.041), was significantly different with respect to the two contact members with medical officers groups; in that the contact members with medical officers group had more responsibility for immunisation.

Nursing colleagues

A comparison of actual roles and functions with respect to two "contact members with nursing colleagues" groups of OH nurses was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.57* and *Table A1.58.* (Appendix A1.) The contact members with medical officers were retrospectively divided into two groups to aid discussion: one had contact members with nursing colleagues and the other had no contact members with nursing colleagues.

A series of Chi-square tests was used to compare the actual roles of OH nurses with respect to two "contact members with nursing colleagues" groups, no significant differences were found. Only one function, "meeting and communication" (P=0.007), was significantly different with respect to the two contact members with nursing colleagues groups; in that the contact members with nursing colleagues group had more responsibility for meeting and communication.

Medical attendants

A comparison of actual roles and functions with respect to two "contact members with medical attendants" groups of OH nurses was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.59* and *Table A1.60.* (Appendix A1.) The "contact members with medical attendants" were retrospectively divided into two groups to aid discussion: one had contact members with medical attendants and the other had no contact members with medical attendants.

A series of Chi-square tests was used to compare the actual roles and functions of OH nurses with respect to two contact members with medical attendants groups. Only one role, "emergency

responsibility" (P=0.005), was there significantly different with respect to the two contact members with medical attendants groups; in that the contact members with medical attendants group had more responsibility for an "emergency responsibility" role. Three functions, "provision of a routine treatment service" (P=0.004), "emergency treatment for accident and illness" (P=0.020), and "development and maintenance of records" (P=0.026), were significantly different with respect to the two contact members with medical attendants groups; in that the contact members with medical officers group had more responsibility for provision of a routine treatment service and emergency treatment for accident and illness, and the no contact members with medical officers group had more responsibility for development and maintenance of records.

Industrial hygienists

A comparison of actual roles and functions with respect to two "contact member with industrial hygienists" groups of OH nurses was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.61* and *Table A1.62.* (Appendix A1.) The "contact members with industrial hygienists" were retrospectively divided into two groups to aid discussion: one had contact members with industrial hygienists and the other had no contact members with industrial hygienists.

A series of Chi-square tests was used to compare the actual roles and functions of OH nurses with respect to two "contact members with industrial hygienists" groups. Only one role, "training" role (P=0.004), was significantly different with respect to the two "contact members with industrial hygienists" groups; in that the contact members with industrial hygienists group had more responsibility for training role. The actual functions of OH nurses with respect to two contact members with industrial hygienists groups, no significant differences were found.

Safety officers

A comparison of actual roles and functions with respect to two "contact members with safety officers" groups of OH nurses was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.63* and *Table A1.64.* (Appendix A1.) The "contact members with safety officers" were retrospectively divided into two groups to aid discussion: one had contact members with safety officers and the other had no contact members with safety officers.

A series of Chi-square tests was used to compare the actual roles and functions of OH nurses with respect to two contact members with safety officers groups. Only two roles, "emergency responsibility" (P=0.001), and "management" (P=0.004), were significantly different with respect to the two contact members with safety officers groups; in that the contact members with safety

officers group had more responsibility for an emergency responsibility role, and the no contact members with safety officers group had more responsibility for management role. The actual functions of OH nurses with respect to two contact members with safety officers groups. Four functions, "provision of a routine treatment service" (P=0.031), "emergency treatment for accident and illness" (P=0.007), "specific health surveillance" (P=0.026), and "immunisation" (P=0.017), had significant differences with respect to the two contact members with safety officers groups; in that the contact members with safety officers group had more responsibility for provision of a routine treatment service, emergency treatment for accident and illness, and specific health surveillance; the "no contact members with safety officers" group had more responsibility for immunisation.

Managers

A comparison of actual roles and functions with respect to two "contact members with managers" groups of OH nurses was carried out using a series of Chi-square statistical tests. The results are given in *Table A1.65* and *Table A1.66.* (Appendix A1.) The "contact members with managers" were retrospectively divided into two groups to aid discussion: one had contact members with managers and the other had no contact members with managers.

A series of Chi-square tests was used to compare the actual roles and functions of OH nurses with respect to two contact members with managers groups. The actual roles of OH nurses with respect to two contact members with managers groups, no significant differences were found. Only in one function, "specific health surveillance" (P=0.037), was there a statistically significant difference with respect to the two contact members with managers groups; in that the "no contact members with managers" group had more responsibility for specific health surveillance.

6.8 The influence of external factors on actual roles and functions

6.8.1 Current changes in occupational health nursing

A comparison of change factors within OH nursing with respect to OH nurses actual roles and functions was carried out using a series of logistic regression tests. The results are given in *Table 6.29* and *Table 6.30.*

Table 6.29 shows which change factors were significant for each actual role and illustrates the actual roles for which each factor was seen as important. Thus it can be seen that significantly more nurses acting in "emergency responsibility", "health surveillance", "health screening"; and

"education" roles considered there were change factors influencing their role. The most significant of these were "changes in consumer understanding and requirement of OH nursing" (P<0.001) and "changes in OH nursing education" (P<0.001), "prevention and early detection instead of treatment of injury and primary care" (P<0.001). Significantly less nurses acting in "therapeutic", "environmental surveillance", "consultant", "training", "management" and "research" roles reported change factors; the most significantly under reported factors being "prevention and early detection" (P<0.001) for those in management roles and research roles.

Table 6.30 shows which change factors were significant for each actual function and illustrates the actual functions for which each factor was seen as important. Thus it can be seen that significantly more nurses with "provision of a routine treatment service", "emergency treatment", "health supervision", "record keeping", "health screening" and "familiarisation with work environment" functions considered there were change factors influencing OH nursing. The most significant of these was "changes in OH nursing education" (P<0.001) for those with "record keeping" and "health screening" functions. Significantly less nurses with "rehabilitation and resettlement", "assessment of the degree of exposure", "immunisation", "informing workers of health hazards" and "occupational safety" functions reported change factors influencing OH nursing. The most significant of these was "changes in OH nursing education" (P<0.001) for those with "occupational safety" functions.

6.8.2 Factors influencing change

A comparison of the external influencing change factors with respect to actual role and actual functions was carried out using a series of logistic regression tests and the results are given in *Table 6.31* and *Table 6.32*. The influencing factors were retrospectively categorised in to eight groups to aid discussion: socio-economic change (economic/financial situation and politics/social policy), awareness of health and environment (better awareness of health and environment and ecological change), policy and legislation, economics evaluation (cost effectiveness of disease prevention and early detection and cost-benefit analysis), health care delivery system, other nurse practitioners, changing industrial system (working processes, computerisation and developments in industry), and interdisciplinary competition.

Table 6.29 The influence of change on actual roles.

Actual roles	OH nursing education	Increasing role	Development as a specialty	Economic/ Financial	Prevention instead of treatment	Consumers understanding
Health surveillance	1.69*** [a]				1.04***	0.93**
Health screening				0.59*	0.77**	1.13***
Education			0 75**		0 50**	
Emergency responsibility			0.75**			0.95***
Therapeutic	-0.46*					
Training			-0.55*			-0.41*
Environmental surveillance						-0.55**
Consultant	-0.59*				-0 71**	
Management	-0 71*	-0 74*			-0.96***	
Research			-2.92**	-1.70**	-1.65***	-1.47*

[a] Logistic regression test, regression coefficient, * P<0 05, ** P<0.01, *** P<0.001.

Table 6.30 The influence of change on actual functions.

Actual functions	OH nursing education	Increasing role	Development as a speciality	Economic/ Financial	Political/ social	Prevention instead of treatment	Consumers understanding
Health screening	0.88*** [a]						0.71**
Health supervision of worker	0.46*		0.61*				
Health education & promotion					1.00**	0 87***	
Individual counselling			0.82**	0.68**			0.67**
Emergency treatment for accident				0.62*		0.69**	0.64*
Routine treatment						0.36*	
Record keeping	0.99***			0.66*	0.78*		
Development & maintenance of records							0.53**
Co-operation with outside agencies		-0.78**	-0.62*			-0 54**	
Informing workers of health hazards			-0.70**			-0.41*	
Occupational safety	-1.21***	-0.83*		-0 68*		-0.54*	
Assessment of exposure			-1.04**		-1.78**	-1 01***	-0 89**
Assisting with socio-psychological problems	-0.71*	-0.94**				-1.28***	
Rehabilitation & resettlement	-0.57**						
Immunisation		-0.73**			-1 03**		
Familiarisation with work environment					0 59*		
First-aid training for workers							
Meetings & communication							
General health surveillance							
Specific health surveillance							

[a] Logistic regression test, regression coefficient, * P<0 05, ** P 0 01, *** P<0.001.

Table 6.31 shows which influencing factors were significant for each actual role and illustrates the actual roles for which each influencing factor was seen as important. Thus it can be seen that significantly more nurses acting in "emergency responsibility", "health surveillance", "health screening", "education" and "training" roles considered there were external influencing factors. The most significant of these were: awareness of health and the environment ($P<0.001$) for those in "emergency responsibility" roles and economic evaluation ($P<0.001$) for those in "health screening" roles. Significantly less nurses in "therapeutic", "environmental surveillance", "consultant", "training", "management" and "research" roles considered there were influencing factors. The most significant of these was "health care delivery system" factors ($P<0.001$) for those in "training" roles.

Table 6.32 shows which influencing factors were significant for each actual function and illustrates the actual functions for which each influencing factor was seen as important. Thus it can be seen that significantly more nurses with "provision of a routine treatment service", "rehabilitation and resettlement", "emergency treatment", "health supervision of workers", "record keeping", "health screening"; "individual counselling", "health education and promotion" and "development and maintenance of records" functions considered there were external influencing factors. The most significant of these were: "awareness of health and environment" ($P<0.001$) for those with "provision of a routine treatment", "emergency treatment" and "health screening" functions; "economics evaluation" ($P<0.001$) for those with "health supervision" and "health education and promotion" functions and "socio-economic change" ($P<0.001$) for those with "individual counselling" functions. Significantly less nurses with "assessment of the degree of exposure", "general health surveillance", "immunisation", "informing workers of health hazards", "occupational safety", "assisting workers with socio-psychological stress" and "co-operation with outside agencies" functions considered there were external influencing factors. The most significantly under reported were: "economic/financial" ($P<0.001$) and "OH nursing education" factors ($P<0.001$) for those with "assessment of exposure" functions; "economics evaluation" factors ($P<0.001$) for those with "immunisation" functions; "policy and legislation" factors ($P<0.001$) for those with "occupational safety" and "co-operation with outside agencies" functions and "awareness of health and environment" factors ($P<0.001$) for those with "assisting workers with socio-psychological problems" functions.

Table 6.31 The influence of external factors on actual roles.

Actual roles	Cost effective-ness	Cost-benefit analysis	Working process	Computer-isation	Better awareness	Health care delivery system	OH nursing education	Economics /Financial	EEC/UK legislation
Health surveillance	1.56*** [a]			0.21**					
Health screening	0.81**		0.68*						
Education	0.44*					0.53*			
Emergency responsibility		-0.64*			1 39***				
Therapeutic	-0.36*								
Training					-1.06***		0 82**		
Environmental surveillance			-0.48**						
Consultant			-0.56**			-0.79**			
Management							-0 87**		-0.72**
Research	-1 61**						-1 25*	-1.31*	

[a] Logistic regression test, regression coefficient, * P<0.05, ** P 0.01, *** P 0.001.

Table 6.32 The influence of external factors on actual functions.

Actual functions	Cost effective-ness	Compu-terisation	Better aware-ness	Health care delivery system	OH nursing education	Economic /Financial	Politics /Social	EEC/UK legisla-tion	Inter-dis-ciplinary competi-tion	Other nurse practition-ers
Health screening			0.94***							
Health supervision of worker								0 52***		
Health education & promotion					-0.87*			1.62***		
Individual counselling				0.56*		0.85***				
Emergency treatment for accident	-0.76* [a]		1.65***							
Routine treatment			0.56***						-0 60*	
Record keeping					0 64*	0.52*				
Development & maintenance of records		0.66**								
Co-operation with outside agencies								-0.95***		
Informing workers of health hazards		-0.56*			0 73*			-0.66*		-0 82**
Occupational safety		-1.17**						-1.05***		
Assessment of exposure					-1.11***	-1.30***				
Assisting with socio -psychological problems			-1.72***							
Rehabilitation & resettlement					-0 69**		0 48*			
Immunisation	-0.66***									
Familiarisation with work environment										
First-aid training for workers										
Meetings & communication										
General health surveillance							-0.36*			
Specific health surveillance										

[a] Logistic regression test, regression coefficient, * P<0 05, ** P<0 01, *** P 0.001.

6.9 Preliminary summary of the influence of internal factors on actual roles and functions

6.9.1 Actual roles

Through the use of Chi-square statistical tests and logistic regression analysis, OH nurses" actual roles and functions were found to be significantly associated with several personal, professional and environmental factors. Firstly, with regard to role, several significant associations emerged (*Table 6.33*).

1) Therapeutic role

The *therapeutic* role was found to be significantly associated with a lower status (staff nurses and enrolled nurses), absence of an OH and OH nursing policy, absence of a manger and no contact with a doctor. The *therapeutic* role was found to be significantly *negatively* associated with a professional motivation for remaining in an OH job, previous medical and surgical experience, the perception of an environmental surveillance role as ideal and primary functions as ideal, the perception of skill characteristics as ideal for OH nurses and the working environment as the unique aspect of OH nursing, relationship and personnel components in an organisation's OH and OH nursing policies respectively and the presence of equipment in the department. The therapeutic role was found to be significantly *positively* associated with the perception of the tertiary role as ideal and of personality characteristics as ideal for OH nurses.

2) Emergency responsibility role

The *emergency responsibility* role was found to be significantly associated with shift work, a salary less than £13,000, an OHNP qualification, 5-9 years previous hospital experience, a definition of OH nursing and OH nurses, an industry setting with less than 1,000 employees, a single nurse unit with no doctor and no contact with a doctor, no secretary, contact with a medical attendant and safety officer. The *emergency responsibility* role was found to be significantly *positively* associated with a personal and professional motivation for taking an OH nursing job, a positive (enjoyment of work) and professional motivation for remaining in an OH job, job satisfaction through relationships in the workplace, previous surgical and accident and emergency experience, a perception of education and tertiary roles as ideal, a perception of personality and skill characteristics as ideal for OH nurses and prevention and recognition as the speciality aspects and prevention and professional aspects as the unique aspects of OH nursing, the presence of service and personnel components in an organisation's OH and OH nursing policies respectively and the presence of treatment orientated space in the department. The emergency responsibility role was found to be significantly *negatively* associated with the presence of company components in an organisation's OH policy.

3) Health surveillance role

The *health surveillance* role was found to be significantly associated with an industry setting. The *health surveillance* role was found to be significantly *positively* associated with a professional motivation for taking an OH nursing job, a positive motivation (enjoyment of work) for remaining in an OH job, job satisfaction through relationships in the workplace, previous surgical and accident and emergency experience, a perception of secondary roles as ideal and both primary and secondary functions as ideal, a perception of skill characteristics as ideal for OH nurses and prevention as the speciality and unique aspect of OH nursing, the presence of service and personnel components in an organisation's OH and OH nursing policies respectively and the presence of general space in the department.

4) Health screening role

The *health screening* role was found to be significantly associated with a two nurse unit with an OH policy. The *health screening* role was found to be significantly *positively* associated with a professional motivation for taking an OH nursing job, a positive motivation (enjoyment of work) for remaining in an OH job, satisfaction with the job's working hours, previous medical, surgical and accident and emergency experience, a perception of secondary and comprehensive roles as ideal and both primary and secondary functions as ideal, a perception of personality and skill characteristics as ideal for OH nurses, prevention as the speciality aspect of OH nursing and prevention and promotion as the unique aspects of OH nursing, the presence of service and personnel components in an organisation's OH policy and personnel components in an organisation's OH nursing policy and the presence of equipment and general space in the department.

5) Environmental surveillance role

The *environmental surveillance* role was found to be significantly associated with more than 5,000 employees in the workplace and a definition of OH nurses. The *environmental surveillance* role was found to be significantly *negatively* associated with personal and professional reasons for taking an OH job, positive reasons for remaining in an OH job, satisfaction with job welfare, previous medical and surgical experience, the perception of an educational and tertiary role as ideal and tertiary functions as ideal, the perception of personality and skill characteristics as ideal for OH nurses, prevention as the specialist aspect of OH nursing and professional aspects as the unique aspects of OH nursing, service and personnel components in an organisation's OH and OH nursing policies respectively and general space in the department.

6) Consultant role

The *consultant* role was found to be significantly *negatively* associated with personal and professional reasons for taking an OH job, positive reasons for remaining in an OH job, satisfaction with work relationships and welfare, previous surgical and accident and emergency experience, the perception of secondary and comprehensive roles as ideal and environmental monitoring and tertiary functions as ideal, the perception of personality and skill characteristics as ideal for OH nurses, prevention as the specialist and unique aspects of OH nursing, service and personnel components in an organisation's OH and OH nursing policies respectively and the presence of general space in the department. The consultant role was found to be significantly *positively* associated with the perception of an educational role as ideal and company components in an organisation's OH policy.

7) Education role

The *education* role was found to be significantly associated with day shift only work pattern and absence of a short professional course. The *education* role was found to be significantly *positively* associated with a professional motivation for taking an OH nursing job, a positive motivation (enjoyment of work) for remaining in an OH job, job satisfaction through direct care, previous surgical experience, a perception of education roles as ideal and both primary and environmental monitoring functions as ideal, a perception of personality and skill characteristics as ideal for OH nurses and prevention as the speciality and unique aspect of OH nursing, the presence of service and personnel components in an organisation's OH and OH nursing policies respectively and the presence of general space in the department. The education role was found to be significantly *negatively* associated with previous accident and emergency experience.

8) Training role

The *training* role was found to be significantly associated with regular contact with a hygienist. The *training* role was found to be significantly *negatively* associated with professional reasons for taking an OH job, positive reasons for remaining in an OH job, satisfaction with working hours, previous accident and emergency experience, the perception of an environmental surveillance and tertiary role as ideal and secondary functions as ideal, the perception of personality characteristics as ideal for OH nurses, prevention as the specialist aspect of OH nursing and professional aspects as the unique aspects of OH nursing, service and personnel components in an organisation's OH and OH nursing policies respectively and the presence of general space in the department. The training role was found to be significantly *positively* associated with the perception of an educational role as ideal, the working environment as a specialist aspect of OH nursing and the presence of treatment oriented space in the department.

9) Management role

The *management* role was found to be significantly associated with a higher status (OH manager or nurse advisor), a salary over £20,000, an OH Diploma, OH experience over ten years, the presence of an OH nurse definition, a non-industry setting with more than 1,000 employees, and no contact with a safety officer. The *management* role was found to be significantly *negatively* associated with personal and professional reasons for taking an OH job, positive and professional reasons for remaining in an OH job, satisfaction with work relationships, previous surgical experience, the perception of educational and secondary roles and primary, secondary and tertiary functions as ideal, the perception of personality characteristics as ideal for OH nurses, prevention and working environment as the specialist and unique aspects of OH nursing, service and personnel components in an organisation's OH and OH nursing policies respectively and the presence of equipment and general space in the department. The management role was found to be significantly *positively* associated with the perception of the comprehensive role and the environmental monitoring function as ideal and the perception of skill characteristics as ideal for OH nurses.

10) Research role

The *research* role was found to be significantly associated with a non-industry setting and the absence of an OH nurses definition. The *management* role was found to be significantly *negatively* associated with personal and professional reasons for taking an OH job, positive and professional reasons for remaining in an OH job, satisfaction with work relationships, previous surgical experience, the perception of educational and secondary roles and primary, secondary and tertiary functions as ideal, the perception of personality characteristics as ideal for OH nurses, prevention and working environment as the specialist and unique aspects of OH nursing, service and personnel components in an organisation's OH and OH nursing policies respectively and the presence of equipment and general space in the department. The management role was found to be significantly *positively* associated with the perception of the comprehensive role and the environmental monitoring function as ideal and the perception of skill characteristics as ideal for OH nurses.

6.9.2 Actual functions

Secondly, with regard to function, several significant associations emerged. (*Table 6.34*).

1) Health supervision of the worker function

The *health supervision of the worker* function was found to be significantly associated with the presence of an OH nursing policy. The *health supervision of worker* function was found to be

significantly *positively* associated with a professional motivation for taking an OH nursing job, a positive professional motivation for remaining in an OH job, job satisfaction with role and function in the workplace, previous medical experience, a perception of secondary roles and functions as ideal, a perception of skill characteristics as ideal for OH nurses and recognition and promotion as specialist and unique aspects of OH nursing respectively, relationship and personnel components in an organisation's OH and OH nursing policy respectively and the presence of equipment in the department. The health supervision of worker function was found to be significantly *negatively* associated with a perception of primary functions as ideal.

2) Assessment of exposure function

The *assessment of exposure* function was found to be significantly *negatively* associated with professional reasons for taking an OH job, personal, professional and positive (enjoyment of work) reasons for remaining in an OH job, job satisfaction with working hours, previous medical, surgical and accident and emergency experience, the perception of the educational role as ideal and the primary and comprehensive functions as ideal, the perception of the educational role as ideal, the perception of primary and comprehensive functions as ideal, the perception of personality and skill characteristics as ideal for OH nurses, prevention and the working environment as the specialist aspects of OH nursing and promotion, the working environment and professional aspects as the unique aspects of OH nursing, service and personnel components in an organisation's OH policy and personnel components in an organisation's OH nursing policy, and treatment and general space in the department. The assessment of exposure function was found to be significantly *positively* associated with the secondary function as ideal.

3) General health surveillance function

The *general health surveillance* function was found to be significantly associated with between 1000-4,999 employees in the workplace. The function of *general health surveillance* was found to be significantly *negatively* associated with personal reasons for remaining in an OH nursing job, the perception of primary and environmental monitoring functions as ideal, and the perception of personality characteristics as ideal for OH nurses. The function of general health surveillance was found to be significantly *positively* associated with the perception of the secondary function as ideal.

4) Specific health surveillance function

The *specific health surveillance* function was found to be significantly associated with regular contact with a safety officer and no contact with a manager. The function of *specific health surveillance* was found to be significantly *negatively* associated with the perception of the

environmental monitoring function as ideal and personality characteristics as ideal for OH nurses. The function of specific health surveillance was found to be significantly *positively* associated with the perception of the environmental monitoring function as ideal and skill characteristics as ideal for OH nurses.

5) Record keeping function

The *record keeping* function was found to be significantly associated with a working week of less than 35 hours, a salary less than £13,000, less than 1,000 employees, and the absence of a safety officer. The *record keeping* function was found to be significantly *positively* associated with personal and professional reasons for taking an OH job, personal and a positive (enjoyment of work) motivation for remaining in an OH job, satisfaction with work relationships, previous surgical, medical and accident and emergency experience, the perception of secondary roles and functions as ideal, the perception of personality and skill characteristics as ideal for OH nurses, the working environment and recognition as the specialist aspects and prevention and the working environment as unique aspects of OH nursing, service and personnel components in an organisation's OH and OH nursing policies respectively and general space in the department. The record keeping function was found to be significantly *negatively* associated with skill components in an OH nursing policy and the presence of general equipment in the department.

6) Health screening function

The *health screening* function was found to be significantly associated with attendance at a short professional course, and an OH policy. The *health screening* function was found to be significantly *positively* associated with a professional motivation for taking an OH nursing job, a positive motivation (enjoyment of work) for remaining in an OH job, job satisfaction with direct care, previous surgical and accident and emergency experience, a perception of the environmental surveillance role as ideal and both environmental monitoring and secondary functions as ideal, a perception of personality and skill characteristics as ideal for OH nurses and prevention as a specialist aspect of OH nursing, a perception of prevention and promotion as unique aspects of OH nursing, and the presence of service and personnel components in an organisation's OH and OH nursing policies respectively. The health screening function was found to be significantly *negatively* associated with the comprehensive function as ideal and the presence of space in the department.

7) Health education and promotion function

The *health education and promotion* function was found to be significantly *positively* associated with a professional motivation for taking and remaining in an OH nursing job, job satisfaction

through working hours, previous surgical experience, a perception of education and environmental roles as ideal and primary functions as ideal, a perception of personality and skill characteristics as ideal for OH nurses, prevention as a specialist aspect of OH nursing and the working environment as a unique aspect of OH nursing, the presence of service and skill components in an organisation's OH and OH nursing policies respectively and the presence of general space in the department. The health education and promotion function was found to be significantly *negatively* associated with the tertiary function as ideal.

8) Rehabilitation and resettlement function

The *rehabilitation and resettlement* function was found to be significantly associated with a salary of £16,000-19,999, a RGN qualification, an OH Diploma, a definition of OH nurses, and a full-time safety officer. The *rehabilitation and resettlement* function was found to be significantly *negatively* associated with job satisfaction with relationships, previous surgical and accident and emergency experience, educational and secondary roles and environmental monitoring and comprehensive functions as ideal, the perception of personality characteristics as ideal for OH nurses, recognition and prevention as the speciality and unique aspects of OH nursing respectively, and the presence of equipment in the department. The rehabilitation and resettlement function was found to be significantly *positively* associated with the tertiary and comprehensive roles and tertiary function as ideal.

9) Immunisation function

The *immunisation* function was found to be significantly associated with a male gender, OH nursing experience of over ten years, regular contact with a doctor and no contact with a safety officer. The *immunisation* function was found to be significantly *negatively* associated with professional reasons for taking and remaining in an OH job, previous surgical and accident and emergency experience, educational and tertiary roles and tertiary and comprehensive functions as ideal, the perception of personality and skill characteristics as ideal for OH nurses, recognition as a speciality aspect of OH nursing and prevention and promotion as the unique aspects of OH nursing, service and personnel components in an organisation's OH and OH nursing policy respectively, and the presence of general space in the department. The immunisation function was found to be significantly *positively* associated with the perception of the primary function as ideal.

10) Emergency treatment for accident and illness function

The *emergency treatment for accident and illness* function was found to be significantly associated with an OHNP qualification, a definition of OH nursing and OH nurses, an industry setting with less than 1,000 employees, a two nurse unit with no full-time doctor or secretary and regular

contact with a medical attendant and safety officer. The *emergency treatment for accident* function was found to be significantly *positively* associated with personal and professional reasons for taking an OH job, personal and positive motivation (enjoyment of work) for remaining in an OH job, satisfaction with relationships at work, previous surgical experience, the perception of secondary and tertiary roles and functions as ideal, the perception of personality and skill characteristics as ideal for OH nurses, prevention and the working environment as the specialist aspects of OH nursing and prevention aspects as the unique aspects of OH nursing, service and personnel components in an organisation's OH and OH nursing policies respectively and treatment oriented and general space in the department. The emergency treatment for accident function was found to be significantly *negatively* associated with the presence of educational oriented equipment in the department.

11) Provision of a routine treatment service function

The *provision of a routine treatment service* function was found to be significantly associated with a salary of between £13,000-15,999, an enrolled nurse qualification, an OHNP qualification, a definition of OH nurses, an industry setting with less than 1,000 employees, the absence of an OH nursing policy, no full-time secretary and regular contact with a medical attendant and safety officer. The *provision of a routine treatment service* function was found to be significantly *positively* associated with a personal motivation for taking and remaining in an OH job, job satisfaction through working hours, the perception of an educational and tertiary role and tertiary functions as ideal, the perception of skill characteristics as ideal for OH nurses and recognition and professional aspects as the speciality and unique aspects of OH nursing respectively, and service components in an organisation's OH policy and the presence of treatment oriented space in the department. The routine treatment function was found to be significantly *negatively* associated with the environmental surveillance role and the environmental monitoring function as ideal and with the presence of educationally oriented equipment.

12) Familiarisation with the work environment function

The *familiarisation with the work environment* function was found to be significantly *positively* associated with the perception of the environmental monitoring function as ideal, the perception of recognition and promotion as speciality and unique aspects of OH nursing respectively, and service components in an OH policy. The familiarisation with the work environment function was found to be significantly *negatively* associated with relationship and personnel components in an organisation's OH and OH nursing policy respectively.

13) Informing workers of health hazards function

The function of *informing workers of health hazards* was found to be significantly *negatively* associated with professional reasons for taking an OH job, a positive motivation (enjoyment of work) for remaining in an OH job, job satisfaction with welfare, previous surgical and accident and emergency experience, perception of secondary and tertiary roles and the primary function as ideal, the perception of personality and skill characteristics as ideal for OH nurses, the working environment as the specialist aspect of OH nursing and promotion and professional aspects as the unique aspects of OH nursing, the presence of service and personnel components in an organisation's OH and OH nursing policies respectively and the presence of space in the department. The function of informing workers of health hazards was found to be significantly *positively* associated with the environmental monitoring function as ideal.

14) Occupational safety function

The *occupational safety* function was found to be significantly associated with a salary of £20,000 or over, a non-industry setting, and no OH policy. The *occupational safety* function was found to be significantly *negatively* associated with personal and professional reasons for taking an OH job, a positive (enjoyment of work) and professional motivation for remaining in an OH job, job satisfaction with working hours, previous medical, surgical and accident and emergency experience, secondary, tertiary and comprehensive roles and functions as ideal, the perception of personality and skill characteristics as ideal for OH nurses, prevention and the working environment as both speciality and unique aspects of OH nursing and promotion as a unique aspect of OH nursing, the presence of company and personnel components in an OH policy and personnel components in an OH nursing policy, and the presence of treatment and educational oriented space available in the department. The occupational safety function was found to be significantly *positively* associated with the environmental monitoring function as ideal.

15) Individual counselling function

The *individual counselling* function was found to be significantly associated with a plan for a further qualification, over 5,000 employees and a two nurse unit. The *individual counselling* function was found to be significantly *positively* associated with a professional motivation for taking an OH nursing job, a positive motivation (enjoyment of work) for remaining in an OH job, job satisfaction through working hours, previous surgical and accident and emergency experience, a perception of secondary roles as ideal, a perception of primary and environmental monitoring functions as ideal, a perception of skill characteristics as ideal for OH nurses and prevention as the speciality aspects and promotion and professional aspects as the unique aspects of OH nursing, the presence of service and personnel components in an organisation's OH and OH nursing

policies respectively and the presence of space in the department. The individual counselling function was found to be significantly *negatively* associated with the secondary function as ideal and with the presence of equipment in the department.

16) Assisting with socio-psychological problems function

The *assisting with socio-psychological problems* function was found to be significantly *negatively* associated with professional reasons for taking an OH job, personal, professional and positive (enjoyment of work) reasons for remaining in an OH job, job satisfaction with working hours, previous surgical and accident and emergency experience, the perception of the educational and tertiary roles as ideal and the secondary, tertiary and comprehensive functions as ideal, the perception of skill characteristics as ideal for OH nurses, prevention, the working environment and recognition as the specialist aspects of OH nursing and prevention and promotion as the unique aspects of OH nursing, service and personnel components in an organisation's OH and OH nursing policy respectively, and the presence of equipment and general space in the department. The assisting with socio-psychological problems function was found to be significantly *positively* associated with previous medical experience and the primary function as ideal.

17) First aid training for workers function

The *first aid training for workers* function was found to be significantly associated with an age of less than 45 years, and an OHNC qualification. The *first-aid training for workers* function was found to be significantly *positively* associated with previous surgical experience, the perception of primary and comprehensive functions as ideal, and company components in an organisation's OH policy. The first-aid training for workers function was found to be significantly *negatively* associated with previous medical experience.

18) Development and maintenance of records function

The *development and maintenance of records* function was found to be significantly associated with a female gender and no contact with a medical attendant. The *development and maintenance of records* function was found to be significantly *positively* associated with professional reasons for taking an OH job, personal and a positive (enjoyment of work) motivation for remaining in an OH job, satisfaction with welfare, previous surgical experience, the perception of a secondary role as ideal and primary and comprehensive functions as ideal, the perception of skill characteristics as ideal for OH nurses, the working environment as the specialist aspect of OH nursing and professional aspects as the unique aspects of OH nursing, personnel components in an organisation's OH and OH nursing policies and the presence of general space in the department.

The development and maintenance of records function was found to be significantly *negatively* associated with job satisfaction through direct care.

19) Meetings and communication function

The *meetings and communication* function was found to be significantly associated with a day shift only duty pattern, an OH Diploma, a plan for a future qualification, a non-industry setting with over 5000 employees, the presence of negative departmental staff relationships and regular contact with nursing colleagues. The *meetings and communication* function was found to be significantly *positively* associated with personal reasons for continuing in an OH job, previous surgical experience, and the perception of the comprehensive function as ideal. The meetings and communication function was found to be significantly *negatively* associated with the perception of the secondary function as ideal.

20) Co-operation with outside agencies function

Finally, the *co-operation with outside agencies* function was found to be significantly associated with a definition of OH nursing. The *co-operation with outside agencies* function was found to be significantly *negatively* associated with personal and professional reasons for taking an OH job, positive and personal reasons for remaining in an OH job, job satisfaction through working hours and with roles and functions, previous surgical experience, the perception of a secondary role as ideal and environmental monitoring, secondary and tertiary functions as ideal, the perception of skill characteristics as ideal for OH nurses, prevention as the specialist aspects and the working environment and promotion as the unique aspects of OH nursing, service and personnel components in an organisation's OH and OH nursing policies respectively and general space in the department. The co-operation with outside agencies function was found to be significantly *positively* associated with job satisfaction through direct care, comprehensive function as ideal and the presence of educational equipment in the department.

Table 6.33 Preliminary summary: Internal factors influencing actual roles of OH nurses.

Actual roles	Personal factors	Professional Background	OH Nurses' Perceptions/ Beliefs	Working Environment	OH and Safety Team
1) Therapeutic	Positngp (3)[a]	HD3 19[b]	IR1 5 IF17 CH2/8 CH5	Policy (2) Npolicy (2) NPCMPT4 EQUIP6	Managrgr (2) CT (2)
2) Emergency responsibility	Dutygr (2) Salarygr (4) RC2/6/7 RJ9/10 S_SCORE3	Pqualigr (4) Hspexp (2) HD7/8	Defohngr (4) Defohns (4) IR2/6 IF7/10 CH1 10/13 ELEM2/5/6 UN4/8	Industgr (2) Noempgp (3) PCMPT1/8/11 NPCMPT3 EQUIP8	Nursegr (3) Doctorgr (2) Secretgr (2) CT1 (2) CT3 (2) CT5 (2)
3) Health surveillance	RC4/5 6/7 RJ5/9 S_SCORE1	HD1/2/8	IR3/4/9 IF2/6/15 CH2/7/9/10/11 ELEM1 4 UN1 8/9	Industgr (2) PCMPT4/5/9 NPCMPT1/3 EQUIP1/4	
4) Health screening	RC4/5 RJ2/4/5/9 S_SCORE3	HD8/11/20	IR3 IF4/5 6/17 CH2/9 ELEM1 2 UN1 4	Policy (2) PCMPT3/8/9 NPCMPT3 EQUIP3	Nursegr (3)
5) Environmental surveillance	RC2/5 RJ9 S_SCORE6	HD12	Defohns (4) IR1 8 IF10 CH6 13 ELEM1 UN4	Noempgp (3) PCMPT8 NPCMPT1 EQUIP8/17	
6) Consultant	RC1/5 RJ9 S SCORE3/6	HD8/20	IR3 6/9 IF10/13 CH1 10/13 ELEM4 UN8	PCMPT9/10 NPCMPT3	
7) Education	Dutygr (2) RC4 RJ2/3/9 S_SCORE2	Scourse (2) HD2/7/8	IR7 IF13 16 CH2/3 ELEM4 UN3/8	PCMPT4 NPCMPT1 EQUIP17	
8) Training	RC5 RJ9 S_SCORE1	HD8	IR1 2/8 IF4 CH8 ELEM1/3 UN4	PCMPT9 NPCMPT3 EQUIP3/5	CT4 (2)
9) Management	Positngr (3) Salarygr (4) RC2/4/6/7 RJ2/9 S_SCORE3	Pqualigr (4) Workyrgo (2) HD2/5	Defohns (4) IR3/7/9 IF5 6/7 10/14 CH2/9/10 CH11/12/13 ELEM1/3 UN1/3/8	Industgr (2) Noempgp (3) PCMPT5/8 NPCMPT3 EQUIP4/9	CT5 (2)
10) Research	RC4/5 6 RJ2/9 10 S SCORE1	HD1/2/8	Defohns (4) IR3 4/5 IF2/7 10/15 CH2/9 10 ELEM1/2/7 UN1/7/9	Industgr (2) PCMPT5/9 NPCMPT1/2/3 EQUIP3/9 11	

[a] the number in the brackets refers to the number of sub-groups of particular variables

[b] Refer to table 6.35 (page 245) for an explanation of the abbreviated codes used in this table.

Table 6.34 Preliminary summary: Internal factors influencing actual functions of OH nurses.

Actual functions	Personal factors	Professional Background	OH Nurses' Perceptions/ Beliefs	Working Environment	OH and Safety Team
1) Health supervision of worker	RC7[b] RJ10	HD13	IR4 IF1 15 CH2 UN9	Policy (2)[a] PCMPT7 NPCMPT1 EQUIP5	
2) Assessment of exposure	RC4/5/6/7 RJ1 5/9/10 S_SCORE1	HD1/2/7/8/12/18	IR2/6/7 IF2/7/15/19/20 CH1/2/10/11 ELEM1/7 UN3/9	PCMPT4/5 NPCMPT3/4 EQUIP3/8	
3) General health surveillance	RJ10		IF7 14/19 CH11	Noempgp (3)	
4) Specific health surveillance	RJ3		IF1/4/14 CH2/7/11		CT5 (2) CT6 (2)
5) Record keeping	Workhrgr (3) Salarygr (4) RC1/7 RJ2/9 S SCORE3/4	HD1 8/13 HD15/20	IR3 IF5 CH2/8/10 ELEM5/6 UN1/3	Noempgp (3) PCMPT9 NPCMPT3 EQUIP3 6	Safetygr (2)
6) Health screening	RC6/7 RJ9 S_SCORE2/5	Scourse (2) HD2/8/13	IR5 IF6 12/13 20 CH1 2/3 ELEM4/6 UN8/9	Policy (2) PCMPT9 NPCMPT1 EQUIP4	
7) Health education and promotion	RC4/5/6 RJ5/6/10 S_SCORE1	HD2	IR5/6 IF7 10 CH5/11/12 ELEM1 UN3/5	PCMPT3 NPCMPT5 EQUIP3/13	
8) Rehabilitation and resettlement	Salarygr (3) RJ1 S_SCORE3	Qualigr (2) Pqualigr (4) HD11	Defohns (4) IR1 4/8/10 IF8/10/13/19 CH13 ELEM5 UN8	EQUIP5	Safetygr (2)
9) Immunisation	Sex (2) RC4/5 S_SCORE6	Workyrgo (2) HD8/20	IR2/7 IF8/9 16/19 CH7 10 ELEM6 UN1/7	PCMPT9 NPCMPT3 EQUIP3	CT1 (2) CT5 (2)
10) Emergency treatment	RC2/7 RJ2/9 S_SCORE3	Pqualigr (4) HD5	Defohngr (4) Defohns (4) IR2/3 IF4/10 CH1 6/8/13 ELEM1/7 UN1/8	Industgr (2) Noempgp (3) PCMPT8 NPCMPT3 EQUIP8/9 11 14	Nursegr (3) Doctorgr (2) Secretgr (2) CT3 (2) CT5 (2)
11) Routine treatment	Salarygr (4) RC1/2 RJ2 S SCORE1	Qualigr (2) Pqualigr (4) HD2/11	Defohns (4) IR2/5 6/8 IF10 11/14 CH13 ELEM5 UN4	Industgr (2) Noempgp (3) Policy (2) PCMPT3/8 EQUIP8/12	Secretgr (2) CT3 (2) CT5 (2)
12) Familiarisation with work environment			IF3/12 ELEM6 UN7	PCMPT3 NPCMPT1	

Actual functions	Personal factors	Professional Background	OH Nurses' Perceptions/ Beliefs	Working Environment	OH and Safety Team
13) Informing of health hazards	RC4 RJ9 S_SCORE6	HD7/8	IR2/3 IF7/13/16 CH2/7 ELEM3 UN2/7	PCMPT8 NPCMPT3 EQUIP6/17	
14) Occupational safety	Salarygr (4) RC1/4/7 RJ5/9 S_SCORE1	HD1/4/5/8	IR2/3/9 IF4/10/14/18/19 CH1/2/10 ELEM1/3 UN3/8/9	Industgr (2) Policy (2) PCMPT1/5 NPCMPT3 EQUIP8/12	
15) Individual counselling	RC4/5 6 RJ9 S_SCORE1	HD2/8	IR3 IF2/4/13/15 CH2/11/12 ELEM1 UN4/9	Noempgp (3) PCMPT9 NPCMPT3 EQUIP1 6/7	Nursegr (3)
16) Assisting socio-psychological problems	RC4/5 6 RJ1/2/9/10 S_SCORE1	HD2/6/8/11/20	IR1/3 IF1/10 15/16/18 CH2/11/13 ELEM2/3/6 UN1/7	PCMPT8/9 NPCMPT1/3 EQUIP4/8	
17) First-aid training for workers	Agegp (2)	Pqualigr (4) HD1 11	IF7 13 17	PCMPT2/7	
18) Development & maintenance of records	Sex (2) RC4 RJ1/9 S_SCORE2/6	HD20	IR3 IF17 18/20 CH2 ELEM3 UN4	PCMPT5 NPCMPT4/6 EQUIP8	CT3 (2)
19) Meetings & communication	Dutygr (2) RJ3	Pqualigr (4)	IF10/19	Industgr (2) Noempgp (2) Dptimpgr (3)	CT2 (2)
20) Co-operation with outside agencies	RC2/7 RJ2/8/9 S_SCORE1/2/5	HD20	Defohngr (4) IR3 IF8/10/13/20 CH2/11 ELEM2 UN3/9	PCMPT9 NPCMPT3 EQUIP3/12/16	

[a] the number in the brackets refers to the number of sub-groups of particular variables

[b] Refer to table 6.35 (page 245) for an explanation of the abbreviated codes used in this table.

Table 6.35 Guide to the abbreviations in Table 6.33, 6.34, 6.36 and 6.37 (in alphabetical order).

Abbreviation	The meaning of the code
CH1	Personal Characteristic: Efficiency
CH2	Personal Characteristic: Good communication skills
CH3	Personal Characteristic: A sense of humour
CH4	Personal Characteristic: Inquisitiveness and inventiveness
CH5	Personal Characteristic: Independence
CH6	Personal Characteristic: Maturity
CH7	Personal Characteristic: Inteligence
CH8	Personal Characteristic: Empathy
CH9	Personal Characteristic: Well developed, effective inter-personal skills
CH10	Personal Characteristic: An enquiring and challenging mind
CH11	Personal Characteristic: Taking on problems and solving them
CH12	Personal Characteristic: Good management skill
CH13	Personal Characteristic: Good basic nursing skills
CH14	Personal Characteristic. Good skills in written and oral presentation
CT1	Contact Member: Medical officers
CT2	Contact Member: Nursing colleagues
CT3	Contact Member: Medical centre attendants
CT4	Contact Member: Industrial Hygienists
CT5	Contact Member: Safety officers
CT6	Contact Member: Managers
CT7	Contact Member: Others
CT8	Contact Member: Secretary
CT9	Contact Member: Physiotherapist
CT10	Contact Member: First-aider
CT11	Contact Member: Training officers
CT12	Contact Member: Administrator
CT13	Contact Member: Medical programme co-ordinator
CT14	Contact Member: Counsellor
CT15	Contact Member: Environmental health officer
DUTYPR	Duty pattern: 2 groups: Day only work Shift work
DEFOHNGR	Definition of OH nursing. 4 groups: AAONN ANA RCN others
DEFOHNS	Definition of the OH nursing: 4 groups: ICOH-NC / AAOHN / USDL others
DOCTORGR	Doctor: 2 groups: Full time / Not full time
ELEM1	Unique elements: Working with healthy people
ELEM2	Unique elements. Preventing disease and injuries
ELEM3	Unique elements. Working in employees' workplace
ELEM4	Unique elements: A preventative, health promoting speciality
ELEM5	Unique elements Relative isolation from the main stream of nursing and other health professionals
ELEM6	Unique elements: Not within the scope of nursing as it is usually understood by the public
ELEM7	Unique elements Part of a more multi-disciplinary team
EQUIP1	Equipment: Waiting room
EQUIP2	Equipment: Office(s for doctor(s)
EQUIP3	Equipment: Office(s for nurse(s)
EQUIP4	Equipment: Facilities for vision test
EQUIP5	Equipment. Facilities for audiometric test
EQUIP6	Equipment. Facilities for stress test

Abbreviation	The meaning of the code
EQUIP7	Equipment: Facilities for X-ray radiography
EQUIP8	Equipment. Separate treatment room(s)
EQUIP9	Equipment: Rest area with bed
EQUIP10	Equipment· Private area for health education
EQUIP11	Equipment: Conference area
EQUIP12	Equipment: Library space
EQUIP13	Equipment: Storage room
EQUIP 14	Equipment: Physiotherapy room
EQUIP15	Equipment: Laboratory room
EQUIP16	Equipment. Staff changing room
EQUIP17	Equipment: Toilet shower
EQUIP18	Equipment: Other equipment and facilities
HD1	Previous hospital experience: Medicine
HD2	Previous hospital experience: Surgery
HD3	Previous hospital experience: Gynaecology
HD4	Previous hospital experience: Obstetrics
HD5	Previous hospital experience: Ophthalmology
HD6	Previous hospital experience Intensive Care
HD7	Previous hospital experience. Operating Theatre
HD8	Previous hospital experience: Accident and Emergency
HD9	Previous hospital experience: Neuro-surgery
HD10	Previous hospital experience: Neurology
HD11	Previous hospital experience: Orthopaedics
HD12	Previous hospital experience: Dermatology
HD13	Previous hospital experience: Paediatrics
HD14	Previous hospital experience: Oncology
HD15	Previous hospital experience: Geriatrics
HD16	Previous hospital experience: Psychiatry
HD17	Previous hospital experience: Mental Handicap
HD18	Previous hospital experience: Out-patients Department
HD19	Previous hospital experience. Communicable Diseases
HD20	Previous hospital experience· Ear, Nose and Throat
HD21	Previous hospital experience. Other Departments
HSPEXP	Previous hospital experience, excluding training: 2 groups. Yes No
IR1	Ideal Role. Therapeutic role
IR2	Ideal Role· Emergency responsibility role
IR3	Ideal Role· Health surveillance role
IR4	Ideal Role· Health screening role
IR5	Ideal Role. Environmental surveillance role
IR6	Ideal Role Consultant Advisor role
IR7	Ideal Role: Education role
IR8	Ideal Role· Training role
IR9	Ideal Role Management role
IR10	Ideal Role Research role
IF1	Ideal Function: Health supervision of workers
IF2	Ideal Function. Assessment of the nature and degree of exposure
IF3	Ideal Function: Undertaking general health surveillance
IF4	Ideal Function: Specific health surveillance
IF5	Ideal Function: Record keeping
IF6	Ideal Function. Health screening
IF7	Ideal Function. Health education and promotion

Abbreviation	The meaning of the code
IF8	Ideal Function. Rehabilitation and resettlement
IF9	Ideal Function. Immunisation
IF10	Ideal Function: Emergency treatment for accidents and illness
IF11	Ideal Function: Provision of a routine treatment service
IF12	Ideal Function: Familiarisation with the work environment
IF13	Ideal Function: Informing workers of health hazards
IF14	Ideal Function: Occupational safety
IF15	Ideal Function: Individual counselling
IF16	Ideal Function: Assisting workers with psycho-social problems
IF17	Ideal Function: First-aid training for workers
IF18	Ideal Function: Development and maintenance of records
IF19	Ideal Function. Meetings and communications
IF20	Ideal Function: Co-operation with outside agencies
INDUSTGR	Industrial organisation: 2 groups: Yes No
MANAGR	Manager groups: 2 groups: Full time Not full time
NURSEGR	Number of nurses in the group 3 groups. Single nurse unit Two nurse unit Multiple nurse unit
NOEMPGR	Number of employees responsible for: 3 groups: < 1,000 / 1,000-4,999 >=5,000
NPCMPT1	Components in OH nursing policy: Written professional and para-professional staff requirements including functions, credentials and skills
NPCMPT2	Components in OH nursing policy: Clearly defineated staffing pattern
NPCMPT3	Components in OH nursing policy: Written job descriptions for each level of staff
NPCMPT4	Components in OH nursing policy:Written policies regarding staff meetings,professional development opptunities
NPCMPT5	Components in OH nursing policy: Budgets for nursing component as well as the overall occupational health programme
NPCMPT6	Components in OH nursing policy: Individual general written instructions for extended nursing skills
PCMPT1	Components in OH policy: Philosophy mission statement
PCMPT2	Components in OH policy: Organisational chart company description
PCMPT3	Components in OH policy: Goals and specific measurable objectives
PCMPT4	Components in OH policy: Scope of health services organisation, staffing and program
PCMPT5	Components in OH policy: Job descriptions
PCMPT6	Components in OH policy: Personnel policies
PCMPT7	Components in OH policy: Inter-relationships with community
PCMPT8	Components in OH policy: Protocols appropriate to cover emergency situations
PCMPT9	Components in OH policy: Administration procedures
PCMPT10	Components in OH policy: Ethical legal aspects of practice
PCMPT11	Components in OH policy: Health and environment relationships
PCMPT12	Components in OH policy: Other components
POLICY	OH policy: 2 groups: Yes No
POSITNGP	Current post grade: 3 groups: High Middle Low
PQUALIGR	Other professional and academic nursing qualifications: 2 groups: Yes No
RC1	Reasons for choosing OH nursing: Daytime work - no shift work
RC2	Reasons for choosing OH nursing: To earn money for the essential
RC3	Reasons for choosing OH nursing Higher salary, more annual leave
RC4	Reasons for choosing OH nursing: Develop professional career
RC5	Reasons for choosing OH nursing: Independent work
RC6	Reasons for choosing OH nursing: Caring for healthy people
RC7	Reasons for choosing OH nursing More challenge
RC8	Reasons for choosing OH nursing: No other job available
RJ1	Reasons for continuing job: Fixed work pattern
RJ2	Reasons for continuing job: To earn money

Abbreviation	The meaning of the code
RJ3	Reasons for continuing job· High salary, more annual leave, good pension
RJ4	Reasons for continuing job· Develop professional career
RJ5	Reasons for continuing job. Independent work
RJ6	Reasons for continuing job. Caring for healthy people
RJ7	Reasons for continuing job: Good relationship with RMO's
RJ8	Reasons for continuing job: Important position in organisation
RJ9	Reasons for continuing job: Enjoyment of work
RJ10	Reasons for continuing job. Continuing challenge
RJ11	Reasons for continuing job· Other reasons
SALARYGR	Salary: 4 groups: < £13,000 £ 13,000-15,999 / £ 16,000-19,999 / >£ 20,000
SCOURSE	Attendence at short professional nursing courses: 2 groups: Yes / No
SECRETGR	Secretary: 2 groups: Full time / Not full time
SEX	Sex of OH nurses: 2 groups: Male / Female
S-SCORE1	Job satisfaction: Hours
S-SCORE2	Job satisfaction: Facilities for direct care
S-SCORE3	Job satisfaction: Relationships
S-SCORE4	Job satisfaction: Professional development
S-SCORE5	Job satisfaction: Roles and functions
S-SCORE6	Job satisfaction: Welfare
UN1	Unique qualities of OH nursing: Preventing ill health and injury at work
UN2	Unique qualities of OH nursing: Possessing a wide knowledge base
UN3	Unique qualities of OH nursing: Providing health care in an environment dedicated to production and profit
UN4	Unique qualities of OH nursing: Establishing long term relationships with a population, and providing continuity of care
UN5	Unique qualities of OH nursing: Able to directly influence decision makers
UN6	Unique qualities of OH nursing: Diverse problems and challenges
UN7	Unique qualities of OH nursing: Improving working conditions
UN8	Unique qualities of OH nursing: Providing health surveillance and maintenance of health
UN9	Unique qualities of OH nursing: Promoting health in the workplace and community
WORKTRGR	Number of years in OH nursing: 4 groups: < 5 / 5-9 / 10-14 / > 15

6.10 Adjustment of the influence of internal factors on actual roles and functions

It was necessary to re-analyse the data to control the confounding variables of age, sex, level of position, income, and reasons for continuing in an OH nursing job (personal factors), because these factors were found to significantly influence the OH nursing practice (actual role and actual function). Once these variables had been controlled through the analysis it was possible to more clearly identify the effect of the independent variables on the dependent variables. On re-analysing the significant data using the logistic regression test, from the previous chi-square test and the logistic regression test, it appears that the focus of internal factors influencing the actual roles of OH nurses is OH nurses' perceptions and beliefs (*Table 6.36* and *Table 6.37*).

The statistical meaning of exponential B (Exp B) will be interpreted as follows. For examples, the education as an ideal role is significantly positively associated with the actual role of education

(B=2.92, Exp B=18.52, P=0.001). Thus the belief that the ideal educational role is associated with the actual one was held 18.52 times more than the belief that it was not associated. In contrast, when variables are significantly, but negatively associated with each other the value of Exp B will always fall between 0 and 1. For example, a negative association was found between the actual consultant role and the ideal characteristic of good basic nursing skills (B=-1.21, Exp B=0.30, P=0.038).

6 10.1 Internal factors related to actual roles

Using logistic regression statistical tests, it was found that several internal factors, relating to OH nurses' perceptions and beliefs (ideal roles, ideal functions, characteristics and unique qualities) appeared to be strongly related to various components of their actual roles (*Table 6.36*).

1) Therapeutic role

In examining OH nurses' ideal roles the nurses perception of this therapeutic role was found to be statistically significant (B=1.97, Exp B=7.16, P=0.002). Thus, their perceptions and beliefs positively correlated with their actual therapeutic role. General professional background was also significantly associated with the actual therapeutic role of OH nurses, but previous experience in gynaecology showed a negative association with the actual therapeutic role (B=-1.20, Exp B=0.30, P=0.043). Similarly, with regard to the actual therapeutic roles of OH nurses, an inverse relationship was found between two factors of the working environment, namely, equipment for stress tests (B=-2.23, Exp B=0.11, P=0.014).

2) Emergency responsibility role

The actual role of emergency responsibility was also positively associated with the OH nurse's perceptions and beliefs (B=2.32, Exp B=10.13, P=0.005) about their ideal role of emergency responsibility. A positive correlation was also found between the provision of a treatment room and actual emergency responsibility role (B=1.53, Exp B=4.64, P=0.028).

3) Health surveillance role

Similarly, the ideal role concerning health surveillance correlated positively with the actual role (B=1.73, Exp B=5.62, P=0 008) of health surveillance, as expected.

4) Health screening role

The OH nurses perceptions and beliefs relating to the ideal function of record keeping for monitoring worker's health, was positively associated with the actual role of health screening

(B=2.05, Exp B=7.75, P=0.019). Similarly, the ideal function, that is, perceptions and beliefs related to health screening, positively correlated with actual health screening behaviours (B=2.84, Exp B=17.08, P=0.011).

5) Consultant/adviser role

Regarding the consultant / adviser role of OH nurses, the ideal role was found to be positively correlated (B=1.65, Exp B=5.25, P=0.002) with the actual role. Similarly, the ethical and legal components of the OH nursing policy within the working environment were positively correlated with the actual consultant role (B=1.25, Exp B=3.50, P=0.021). However, the ideal characteristic of good basic nursing skills correlated inversely with this actual role (B=1.21, Exp B=0.30, P=0.038).

6) Education role

The actual role of education was found to be positively associated with the ideal role (B=2.92, Exp B=18.52 P=0.001). The ideal function of informing workers of health hazards was positively related to the actual role (B=1.10, Exp B=5.45, P=0.004), as was the ideal function of assisting workers with psycho-social problems (B=2.86, Exp B=17.47, P=0.024). The most important personal characteristic relating to education was thought to be that of a sense of humour, which correlated positively with the actual role of education (B=1.43, Exp B=4.16, P=0.033). Regarding the unique aspects of OH nursing, providing health surveillance and maintenance of health were considered important, and were positively associated with the actual role (B=1.57, Exp B=4.79, P=0.008).

7) Training role

The ideal and actual role of the OH nurse was found to be positively correlated (B=0.93, Exp B=2.53, P=0.039). Of the various members of the OH and safety team, the OH nurses indicated having most contact with the industrial hygienists, and this was positively related to the actual training role of the OH nurse (B=2.02, Exp B=7.50, P=0.022). This seems particularly relevant, in that, less than 10% of the OH nurses surveyed were working with an industrial (occupational) hygienist, whereas nearly 50% were working with a safety officer (*Table 5.30*). However, previous work experience in hospital accident and emergency departments was found to be inversely related to the actual role of training (B=-1.27 Exp B=0.28, P=0.005). A similar significant inverse relationship was found between the personality characteristic of empathy (B=-1.01, Exp B=0.36, P=0.034) and the actual training role. The belief concerning working with healthy people as a

unique quality of OH nursing was also inversely related to the actual training role of the OH nurse (B=-1.72, Exp B=0.18, P=0.002).

8) Environmental surveillance, management and research roles

The three actual roles not to show any significant association with internal influencing factors were those of environmental surveillance, management and research role.

6.10.2 Internal factors related to actual functions

The internal factors influencing the actual functions of OH nurses were identified, using a series of logistical regression tests. As in the previous section concerning actual roles, the most prevalent factors influencing actual functions are those relating to OH nurses' beliefs and perceptions. Internal factors relating to working environment, also appear to be relatively common. (*Table 6.37*).

1) Health supervision of workers function

Regarding health supervision of workers, the actual and ideal function were positively correlated (B=2.18, Exp B=8.86, P<0.001).

2) Assessment of exposure function

The assessment of the nature and degree of exposure, with regard to ideal and actual function was positively correlated (B=2.62, Exp B=13.75, P=0.001). Also, the ideal role of consultant/advisor was positively correlated with the actual function of assessment of exposure (B=-2.17, Exp B=0.11, P=0.017). A negative correlation was found between the assessment of exposure function and the policy components related to professional development and staffing (B=-2.54, Exp B=0.08, P=0.027).

3) General health surveillance function

The actual function of general health surveillance was negatively associated with the ideal function of occupational safety (B=-0.83, Exp B=0.44, P=0.012). Also, the number of employees within an organisation was negatively associated with the actual function of general health surveillance (B=-0.42, Exp B=0.66, P=0.027).Thus, with a smaller number of employees OH nurses undertook less health surveillance.

4) Specific health surveillance function

Regarding specific health surveillance, the actual function was positively correlated with ideal function (B=1.29, Exp B=3.63, P<0.001). However, the actual function of health surveillance was negatively associated with contact with managers (B=-0.63., Exp B=0.53, P=0.039).

5) Record keeping function

The ideal and actual function of record keeping was positively correlated (B=1.76, Exp B=5.83, P=0.003).

6) Health screening function

The ideal and actual function of health screening was positively correlated (B=1.87, Exp B=6.51, P=0.012). Furthermore, the ideal role of environmental surveillance was also positively associated with the actual health screening function (B=1.93, Exp B=6.89, P=0.010).

7) Health education and promotion function

Regarding health education and promotion, the actual and ideal functions were positively correlated (B=1.81, Exp B=6.08, P=0.023). The unique concept among OH nurses of working with healthy people was also positively correlated with the actual function of health education and promotion (B=1.28, Exp B=3.58, P=0.019). Also, the provision of a job description appeared to be positively related to the actual function of health education and promotion (B=1.02, Exp B=2.78, P=0.033).

8) Rehabilitation and resettlement function

The ideal and actual function of rehabilitation and resettlement were positively correlated (B=1.40, Exp B=4.07, P=0.010). A positive association was also found between previous qualifications and the rehabilitation and resettlement function of OH nurses (B=1.15, Exp B=3.16, P=0.001). However, the ideal function concerning meetings and communication was negatively associated with the rehabilitation and resettlement function (B=-1.20, Exp B=0.30, P=0.025). Health surveillance was also found to be negatively associated with the rehabilitation and resettlement function (B=-1.14, Exp B=0.32, P=0.016).

9) Immunisation function

Regarding immunisation, the actual function and ideal function were positively related (B=2.74, Exp B=15.52, P=0.001). The ideal function of rehabilitation and resettlement was however, negatively related to the actual function of immunisation (B=-1.07, Exp B=0.34, P=0.038). Thus,

those who believed that rehabilitation and resettlement were important functions were less likely to be those who were carrying out immunisation procedures. The characteristic of an enquiring and challenging mind was also negatively related to the actual function of immunisation (B=-1.62, Exp B=0.20, P=0.009).

10) Emergency treatment function

With regard to emergency treatment, ideal function and actual function were positively correlated (B=2.18, Exp B=8.88, P=0.006). The two most influential personal characteristics positively associated with the function of emergency treatment were maturity (B=2.59, Exp B=13.35, P=0.010) and efficiency (B=2.21, Exp B=9.13, P=0.049). The provision of an appropriate protocol to cover emergency situations was positively associated with the actual function of emergency treatment (B=2.59, Exp B=13.28, P=0.001). The number of employees within organisations was also a statistically significant factor regarding emergency treatment function, but this was a negative association (B=-2.35, Exp B=0.10, P=0.001), suggesting that, with larger the numbers of employees there is less likelihood of the OH nurses undertaking emergency treatment.

11) Routine treatment function

A positive correlation was found between the actual function of routine treatment and the ideal function (B=2.90, Exp B=18.16, P=0.010). Another important factor associated with the function of routine treatment was the provision of a treatment room in the working environment (B=1.80, Exp B=6.08, P=0.007).

12) Familiarisation with work environment function

The only one actual function not to show any significant association with internal influencing factors was familiarisation with work environment function.

13) Informing workers of health hazards function

The actual and ideal functions concerning "informing workers of health hazards" were positively correlated (B=1.73, Exp B=5.67, P=0.002). The ideal function of assisting workers with psycho-social problems was also positively associated with the actual function of giving information about health hazards (B=1.98, Exp B=7.22, P=0.003). However, a negative correlation was found between the provision of an appropriate protocol to cover emergency situations and the actual function of informing of health hazards (B=-1.37, Exp B=0.25, P=0.010).

14) Occupational safety function

Regarding occupational safety, the actual and ideal functions were positively correlated (B=3.09, Exp B=22.06, P<0.001). A significant negative correlation was found between the actual function of occupational safety and the provision of a library within the working environment (B=-2.43, Exp B=0.09, P=0.005). This raises questions as to the function of the library with regard to occupational safety. It may be that an assumption is made, that if information is freely available, then actual responsibility towards safety rests with each individual. Furthermore, organisations with libraries are generally the larger ones, and responsibility for safety may therefore rest with the occupational hygienist or safety officer rather than the OH nurse.

15) Individual counselling function

The actual and ideal functions regarding individual counselling were positively correlated (B=1.12, Exp B=3.05, P=0.045). The ideal role of general health surveillance was also positively related to the actual function of individual counselling (B=2.79, Exp B=16.24, P=0.005). However, the ideal function of specific health surveillance was inversely related to the actual individual counselling function (B=-1.28, Exp B=0.28, P=0.032).

16) Assisting with psycho-social problems function

The internal factors that appeared to affect the actual function of assisting with psycho-social problems were related to professional background. Previous experience working in a hospital intensive care unit was positively related (B=2.26, Exp B=9.55, P=0.003), while previous experience working in orthopaedics was negatively related (B=-2.72, Exp B=0.07, P=0.002) to this actual function.

17) First-aid training function

The actual function and ideal function of first-aid training for workers was positively correlated (B=1.25, Exp B=3.48, P=0.002). Also, previous experience in orthopaedics was positively related to the actual first-aid training for workers function (B=0.99, Exp B=2.69, P=0.041). However, the provision of a policy relating to inter-relationships with community personnel and resources was inversely associated with the actual function of first-aid training for workers (B=-1.21, Exp B=0.30, P=0.004).

18) Developing and maintaining records function

Regarding the actual and ideal function of developing and maintaining records, a positive correlation was established (B=1.62, Exp B=5.04, P=0.001). Furthermore, the ideal function of

first-aid training for workers was also positively related to the actual function of developing and maintaining records (B=1.14, Exp B=3.11, P=0.019).

19) Meetings and communication function

The actual role and ideal function concerning meetings and communication was positively correlated (B=1.07, Exp B=2.92, P=0.001). An industrial working environment, as opposed to a non-industrial working environment, was also positively associated with the actual function of meetings and communication (B=1.11, Exp B=3.04, P=0.007).

20) Co-operating with outside agencies function

Finally, the ideal and actual function of co-operating with outside agencies was positively correlated (B=2.21, Exp B=9.09, P<0.001). Interestingly, no internal factors emerged to suggest any significant association with the actual function of familiarisation with the work environment.

Table 6.36 Adjusted summary: Internal factors influencing actual roles of OH nurses.

Actual roles	Professional Background	OH Nurses' Perceptions/ Beliefs	Working Environment	OH and Safety Team
1) Therapeutic	HD3 (-1.20,0.30,0.043)	IR1 (1.97,7.16,0.002)	Equip6 (-2.23,0.11,0.014)	
2) Emergency responsibility		IR2 (2.32,10.13,0.005)	Equip8 (1.53,4.64,0.028)	
3) Health surveillance		IR3 (1.73,5.62,0 008)		
4) Health screening		IF5 (2.05,7.75,0 019) IF6 (2.84,17.08,0.011)		
5) Environmental surveillance				
6) Consultant		IR6 (1.65,5.25,0.002) CH13 (-1.21,0.30,0.038)	Pcmpt10 (1.25,3 50,0.021)	
7) Education		IR7 (2.92,18.52,0.001) IF13 (1.70,5.45,0.004) IF16 (2.86,17.47,0.025) CH3 (1.43,4.16,0.033) UN8 (1.57,4.79,0.008)		
8) Training	HD8 (-1.27,0.28,0.005)	IR8 (0.93,2.53,0.039) CH8 (-1.01,0.36,0.034) Elem1 (-1.72,0.18,0.002)		CT4 (2.02,7.50,0.022)
9) Management				
10) Research				

[a] Logistic regression test (Regression coefficient, Exponential regression coefficient, Probability)

Table 6.37 Adjusted summary: Internal factors influencing actual functions of OH nurses.

Actual functions	Professional Background	OH Nurses' Perceptions/ Beliefs	Working Environment	OH and Safety Team
1) Health supervision of worker		IF1 (2.18,8.86,<0.001)		
2) Assessment of exposure		IF2 (2.62,13.75,0.001) IR6 (-2.17,0.11,0 017)	Npcmpt4 (-2.54,0.08,0.027)	
3) General health surveillance		IF14 (-0 83,0.44,0 012)	Noempgp (-0 42,0.66,0.027)	
4) Specific health surveillance		IF4 (1.29,3.63,<0.001)		CT6 (-0.63,0.53,0.039)
5) Record keeping		IF5 (1.76,5.83,0.003)		

Actual functions	Professional Background	OH Nurses' Perceptions/ Beliefs	Working Environment	OH and Safety Team
6) Health screening		IF6 (1.87,6.51,0.012) IR5 (1.93,6.89,0.010)		
7) Health education and promotion		IF7 (1.81,6.08,0.023) Elem1 (1.28,3.58,0 019)	Npcmpt5 (1.02,2.78,0.033)	
8) Rehabilitation and resettlement	Pqualigr (1.15,3.16,0.001)	IR8 (1.40,4.07,0.01) IF19 (-1.20,0.30,0 025) UN8 (-1.14,0.32,0.016)		
9) Immunisation		IF9 (2.74,15.52,0.001) IF8 (-1.70,0.34,0.038) CH10 (-1.62,0.20,0.009)		
10) Emergency treatment		IF10 (2.18,8.88,0 006) CH6 (2.59,13.35,0.010) CH1 (2.21,9.13,0.049)	Pcmpt8 (2.59,13.28,0 004) Noempgp (-2.35,0.10,0.001)	
11) Routine treatment		IF11 (2.90,18.16,0.010)	Equip8 (1.80,6.08,0.007)	
12) Familiarisation with work environment				
13) Informing of health hazards		IF13 (1.73,5.67,0.002) IF16 (1.98,7.22,0.003)	Pcmpt8 (-1.37,0.25,0.010)	
14) Occupational safety		IF14 (3.09,22.06,<0.001)	Equip12 (-2.43,0 09,0.005)	
15) Individual counselling		IF15 (1.12,3.05,0.045) IR3 (2.79,16 24,0.005) IF4 (-1.28,0 28,0.032)		
16) Assisting psycho-social problems	HD6 (2.26,9.55,0.003) HD11 (-2.72,0.07,0.022)			
17) First-aid training for workers	HD11 (0.99,2.69,0 041)	IF17 (1.25,3.48,0 002)	Pcmpt7 (-1.21,0.30,0 004)	
18) Development & maintenance of records		IF18 (1 62,5.04,0.001) IF17 (1 14,3 11,0 019)		
19) Meetings & communication		IF19 (1.07,2.92,0.001)	Industgr (1.11,3 04,0.007)	
20) Co-operation with outside agencies		IF20 (2.21,9.09,<0 001)		

[a] Logistic regression test (Regression coefficient, Exponential regression coefficient, Probability).

6.11 Conclusions

Of the internal influencing factors within the analytical model the four major factors emerged of these. The "working environment" and "OH nurses' perceptions and beliefs" were the two greatest influencing factors, while "professional background of OH nurses" and "OH and safety team" had a lower percentage influence. The "working environment" factor consisted of five components: the size of organisation (i.e. the number of employees), the type of organisation (i.e. industrial or non-industrial), organisational OH policy, OH nursing policy; and OH equipment and facilities. "OH nurses' perceptions and beliefs" was also made up of five components: ideal roles, ideal functions, ideal characteristics of OH nurses, unique qualities of OH nursing, and differences between OH nursing and general nursing. (*Figure 6.3*)

Within the external factors, there were twelve significant items Data analysis revealed the order of importance to be as follows, starting with the greatest influencing factor: OH nursing education, cost effectiveness of disease prevention and early detection, legislation, better awareness of health and environment, economic and financial situation and computerisation, health care delivery system, working process and technical changes, political and social policy, interdisciplinary competition, developing roles of other nursing practitioners and, finally, cost benefit analysis. (*Table 6.31* and *Table 6.32*) The twelve dynamic, external components to this framework represent "outside" influences which have the capacity to effect any of the four internal factors, which in turn have the capacity to influence OH nursing practice. Because the external factors are not constrained to any particular internal factor, the framework can be conceived as rotational. Therefore it is possible that any combination of external factors can influence an internal factor. The benefit of this framework is that it is flexible enough to deal with fluctuating situations and inevitable changes, because it is not rigid. Thus, the external factors can only indirectly influence OH practice, whereas the internal factors directly influence OH practice. (*Figure 6.4*)

The major finding from this study, following a series of logistic regression tests, was the identification of four internal factors and twelve external factors. The relationship between these and OH nursing practice will be discussed in detail in Chapter 8.

Figure 6.3 Significant findings of the internal factors influencing OH nursing practice.

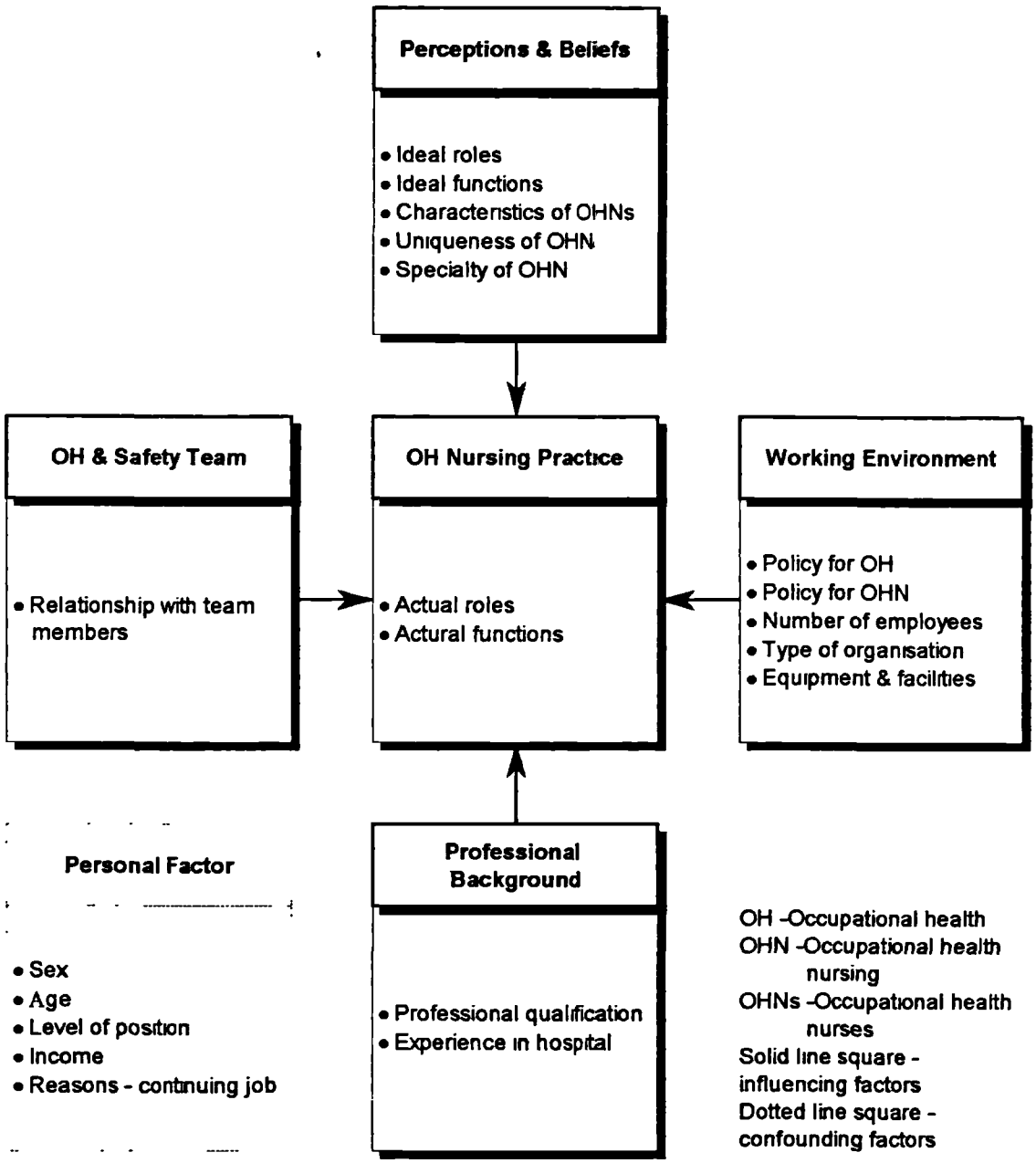
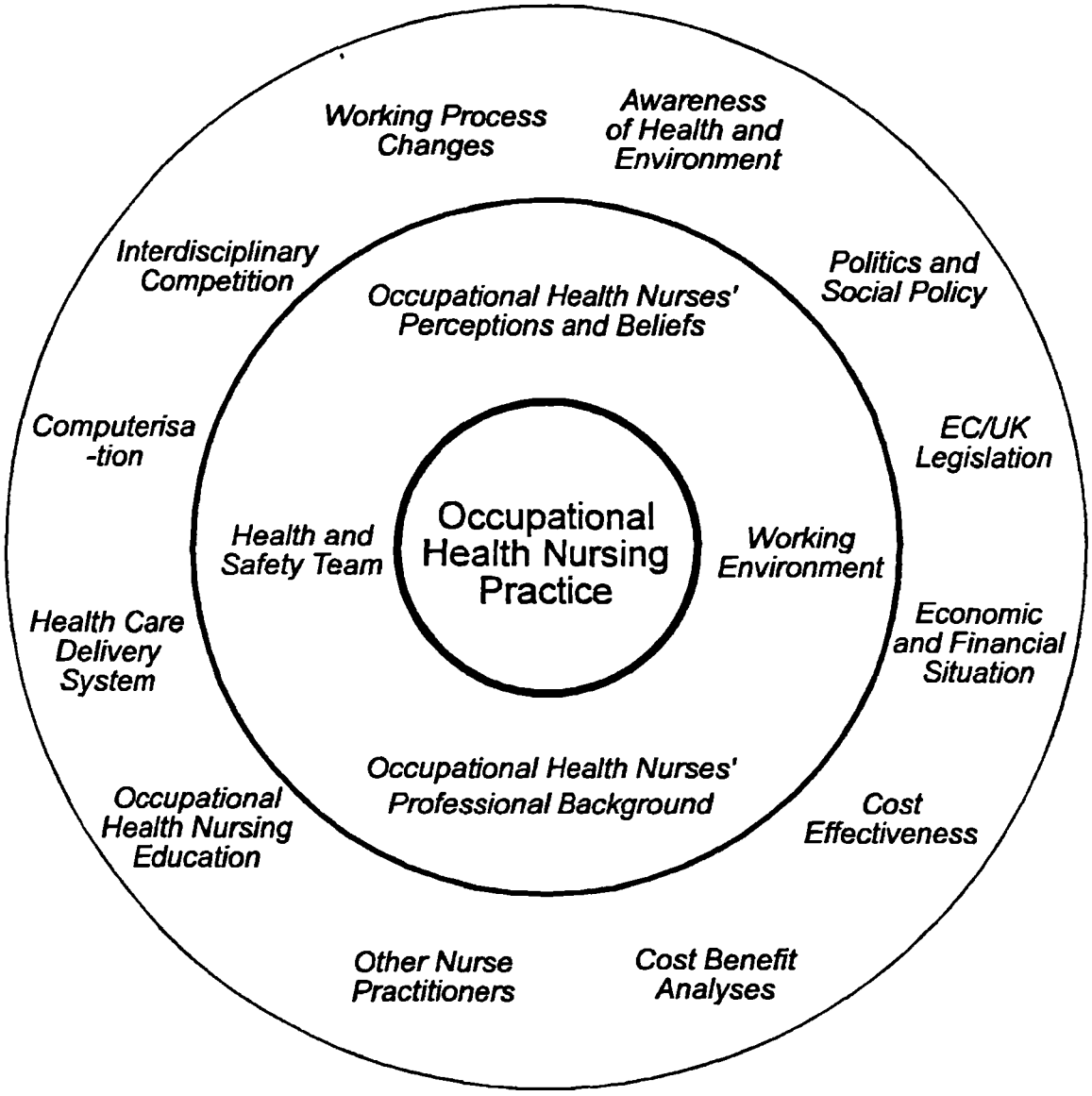


Figure 6.4 Significant findings of the external factors influencing OH nursing practice.



Chapter 7 Integration of Main Findings from Key Person's and Occupational Health Nurses' Survey

7.1 Introduction

The aim of this chapter was to integrate findings from the qualitative data from the key persons' survey, with the quantitative data from the OH nurses' survey. In addition, the data from the open ended questions and free format comment of OH nurses' survey questionnaires were integrated to provide a more comprehensive picture.

In order to examine the similarities and differences between key persons' and OH nurses' perceptions about OH nursing practice, relative rank order was utilised, where roles and functions of OH nurses were ranked according to the frequency with which there were chosen by each group.

The following topics will be discussed in detail: key persons' and OH nurses' perceptions and beliefs; internal and external factors influencing OH nursing practice; OH nursing professional development; their educational needs; and a need for a model in OH nursing practice.

7.2 Key persons' and occupational health nurses' perceptions and beliefs

7.2.1 Congruence between key persons and occupational health nurses perceived the ideal roles of occupational health nurses

In an attempt to establish how OH nurses perceive themselves, their roles were identified in this study via a forced choice and open format questions, within the questionnaire. The five major specific ideal OH nurse roles that have been identified in this study are health surveillance, education, health screening, environmental surveillance, and consultant and advisor roles. (*Table 5.17*)

Regarding the six roles of promotion, prevention, management, care, protection and research, interesting differences and similarities emerged between how key persons and OH nurses rated the relative importance of these roles, in terms of ideal beliefs. *Table 7.1* illustrates the results of the rank order distributions for each group.

Table 7.1 Comparison of ideal roles of OH nurses between key persons and OH nurses.

Key roles	Key persons (No. in total)	Rank	OH nurses (%)	Rank
Promotion	**25/31**	**1**	**58.5**	**3**
Education	20/31		83.0	
Consulting/Advising	13/31		39.8	
Training	2/31		34.0	
Prevention	**15/31**	**2**	**79.3**	**1**
Health surveillance	4/31		88.0	
Health screening	2/31		70.5	
General prevention	11/31			
Management	**13/31**	**3**	**27.8**	**5**
Management	10/31		27.8	
Communication/Liaison	3/31			
Administration	1/31			
Care	**7/31**	**4**	**26.2**	**6**
Therapeutic	7/31		19.1	
Emergency responsibility	1/31		33.2	
Protection	**6/31**	**5**	**68.0**	**2**
Environmental surveillance	6/31		68.0	
Research	**2/31**	**6**	**28.2**	**4**
Total number	31	-	244	-

From *Table 7.1* it is evident that the roles of prevention and promotion are endorsed as important by both key persons and OH nurses. Interestingly, key persons ranked promotion as most important, while OH nurses ranked prevention as the most important ideal role. With regard to the components of the promotion role the key persons *and* OH nurses indicated that they thought the educational component of the promotion role was more important than the consulting or advising role. The ideal roles of promotion, management and care were rated higher by key persons than by OH nurses, whereas the roles of protection and research were rated more highly by OH nurses than by the key persons.

There were some notable differences and similarities between the two groups with regard to the relative ranking allocated to the six roles. For example, one of the major differences in opinion was identified with regard to the role of protection, where OH nurses rated it as the second most important ideal role (2nd), but key persons rated it as the second least important (5th). A possible explanation for this discrepancy may be that OH nurses are more aware of their actual responsibility towards environmental surveillance - a component of the role of protection. This is

likely, as about 60% of OH nurses work alone without the backup of a safety officer. Thus, the responsibility involved in the actual role of protection may influence OH nurses opinions regarding the ideal role. Key persons are not directly involved in environmental surveillance and therefore are not influenced by the same pressures of responsibility.

Other interesting discrepancies in opinion were found regarding the roles of research and care. An ideal research role was rated quite low by both groups, but it is interesting that it was the key persons who rated it more negatively - indeed last (6th), versus 4th by the OH nurses. Surprisingly, this pattern was reversed with regard to an ideal role of care, where the OH nurses rated care last (6th) and the key persons rated it 4th. Also, considering the two main components of the care role as related to therapeutic and emergency responsibilities, it is interesting to note that the key persons identified the therapeutic as more important, while the OH nurses identified the emergency responsibility component as more important. A possible explanation for this finding is that individuals may discredit activities they frequently perform (such as "care" in the case of the OH nurses, and "research" in the case of the key persons) and idealise those that they have less experience of but are nevertheless familiar with (i.e. "research" in the case of OH nurses).

7.2.2 Congruence between the ideal and actual role

It is evident that most OH nurses perceived the ideal and actual preventative role of OH nursing as a high priority. However, regarding the ideal and actual role of "care" there is a discrepancy in priority, with the actual role being rated high (2nd out of the 6 ranks) while the ideal role is rated as low (6th). This indicated that nurses feel that they should give more priority to the other five roles, but think that they actually prioritise the care role highly in practice. It may be problematic to achieve equality in prioritising ideal and actual practice regarding care, as care is often given on a demand basis. The protection role also shows a discrepancy in priority rating between ideal and actual practice. The ideal protection role is rated more highly (2nd) than the actual practice role of protection which was rated fourth. Thus, it seem that OH nurses think that protection is important and need to concentrate more on achieving goals in actually, regarding this role. (*Table 7.2*)

In comparing the priorities of the key persons with those of the OH nurses, in relation to the six key roles (promotion, prevention, management, care, protection, and research) a number of interesting differences emerged. Most of key persons (i.e. OH nurse managers) rated the role of promotion as highest, whereas half the nurses rated both the ideal and actual role of promotion as third. Similarity, the role of protection was rated more highly by the nurses than by the key persons. The ideal role of protection was rated second and the actual role of protection was rated

as fourth by nurses in contrast to sixth by key persons. The other five roles were not that dissimilar regarding priority ratings of nurses compared to key persons even thought none matched exactly. A possible explanation for these differences may simply be that it reflects the different orientation and perceptions of those working as nurse "managers" compared to nurse "practitioners". Obviously both groups will have different goals, perceptions, etc. influenced by reflective practice and experience. (*Table 7.2*)

Table 7.2 Comparison of the ideal roles between key persons and OH nurses.

Key roles	Key persons		OH nurses			
	No. in total	Rank	Ideal role (%)	Rank	Actual role (%)	Rank
Promotion	**25/31**	**1**	**58.5**	**3**	**53.4**	**3**
Educator	20/31		83.0		66.0	
Trainer	2/16		34.0		40.7	
Consultant/adviser	13/31		39.8		31.5	
Prevention	**15/31**	**2**	**79.3**	**1**	**82.8**	**1**
Health surveillance	4/31		88.0		78.0	
Health screening	2/31		70.5		87.6	
General prevention	11/31					
Management	**13/31**	**3**	**27.8**	**5**	**21.2**	**5**
Management	10/31					
Communication	3/31					
Administration	1/31		27.8		21.2	
Care	**7/31**	**4**	**26.2**	**6**	**58.1**	**2**
Therapeutic	7/31		19.1		45.2	
Emergency responsibility	1/31		33.2		71.0	
Protection	**6/31**	**5**	**68.0**	**2**	**39.8**	**4**
Environmental surveillance	6/31		68 0		39.8	
Research	**2/31**	**6**	**28.2**	**4**	**4.1**	**6**
Total number	31	-	244	-	244	-

In contrast to the findings related to practice (explained in the previous section) these findings suggest that most OH nurses do in fact endorse the ideas and principles related to promoting preventive - progressive practice. Thus it appears that although OH nurses would like to develop and expand their practice from the "traditional" to the "progressive" they have not actually achieved this at the present. This may explain why some of the views endorsed by respondents who completed the free format section in the questionnaire appear to be contradictory, in that they

express both positive and negative views about OH nursing. For example, there do appear to be some concerns about raising the profile of the OH nurse in conjunction with developing a less traditional role.

In the positive and neutral comments regarding OH nurses' perceptions and beliefs a number of statements referred to the belief about the importance of promoting the role and credibility of the OH nurses and enhancing the image. These ranged from simple suggestions e.g. to change such things as the title or the uniform to more complicated solutions such as demonstrating the cost effectiveness of OH nursing and increasing involvement in the organisation's management. However, implicit in these comments is an underlying dissatisfaction with the current status of OH nursing, as is more overtly expressed by some of the negative comments. For example some nurses expressed concerns about OH nurse's being viewed as "ministering angels", "a kindly caring dogsbody", or "doing their job for the cause", and about OH nursing as "an escape route", "tiresome on occasions", or "a job to spend the last 10 years of your career in" - all of which are undermining statements. One respondent claimed that "after 28 years we are still missionaries".

Indeed, many OH nurses seemed to be worried or disillusioned about the future of OH nursing, with comments such as "the job can soon become frustrating", "at the moment we feel to be floundering", "we have lost momentum", and "we are banging our head against a brick wall" appearing frequently. Many seem to be concerned with the lack of opportunity to extend their role or fulfil their expectations or potential. As one nurse commented "it will diminish as a speciality and merely revert to being glorified first aid".

Despite these concerns and negative statements, many OH nurses do enjoy aspects of their work and value it. The following comments were not uncommon: "I am still interested in OH", "I am very enthusiastic about OH", "it remains a pioneering field of nursing", "OH nursing is a very rewarding area of nursing", and "it is as exciting as it was in the beginning".

Not surprisingly, it would appear that some OH nurses hold mixed views concerning beliefs and perceptions of OH nursing, especially when a number of different issues are discussed together. The following complete excerpt from one respondent illustrates this very well.

> "Although OH has developed considerably since I first came into it, I feel it is regrettable that a treatment service - even at specified times seems to be minimal or non existent. My personal experience is that whilst it can be tiresome on occasions, it can be cost effective by keeping people at work - early detection of problems either physical or environmental.

> By providing an ideal opportunity for one to one education it enhanced the credibility of the OH nurse. It was welcomed by hospital and local GPs who were pleased to receive specialist advice and without whose support we could not have functioned so well. The result was very satisfied employees."

Here the respondent highlights the positive elements of OH nursing to be progress (although this is not elaborated upon), economic efficiency and credibility, and the negative elements to be concerned with actual practice/service and monotony. However, even the positive statements have undertones of dissatisfaction, implied by the use of the past tense - as if they no longer apply in the present climate.

7.2.3 Congruence between key persons and occupational health nurses themselves defined occupational health nursing

In the main study the AAOHN's (1987) definition of OH nursing was seen as the most appropriate, with 58% of respondents identifying this definition as the most salient out of a choice of the four definitions. The second most salient definition was identified as the ANA, with 26.7% of respondents identifying this one as most appropriate. (*Table 5.19*) The AAOHN's definition frequently appears in text books which may explain its popularity with respondents, despite the fact that this definition originates in American, and the respondents in this study are British nurses. This definition also emphasises the application of nursing principles, health education, counselling, environmental health, rehabilitation techniques and human relations skills to practice and incorporates all workers in all occupations. In contrast, the definition supplied by the ANA is less specific and comprehensive, focusing more upon the dynamics of OH nursing in terms of meeting the fluctuating needs of employees working in diverse but specific environments. A major difference in these definitions to that provided by the RCN (1985) is that they explicitly relate knowledge to practice, whereas the RCN's definition does not even mention the importance of applying any principles to practice. Instead it only emphasis the "doing" aspects of the job in relation to its goals. Interestingly, The ILO's (1983) definition mentions only the application of practice and procedures in order to achieve goals and does not specify what may be involved or associated with these activities. Furthermore there is no mention of the utility of education or theoretically based principles. Instead, the focus is implicity placed on "training" to enable procedural practice. (*Table 7.3*)

Table 7.3 Comparison of the definitions of OH nursing.

Definition	AAOHN (1987)	ANA (1968)	RCN (1985)	ILO (1983)	Key persons
Purpose and practice	The application of nursing principles in conserving the health of workers in all occupations Prevention, recognition, and treatment of illness and injury	Applies professional nursing principles in developing and carrying out a nursing service	Promotion of a high degree of physical and mental health and well-being. Prevention of illness and injury due to the work Immediate treatment for illness or injury arising at work.	The application of nursing practice and public health procedures for the purpose of conserving, promoting and restoring the health	Promotion of good health and well-being. Prevention of ill health and injury. Protection of people at work. Maintenance of good health.
Focus	Workers All occupations	Changing environment of the specific company as well as the needs of its employees	People at work	Individuals and groups	People at work Workers Employees Groups
Location		Specific company	Working environment	Places of employment	Workplace Working environment
Knowledge needed	Nursing principles Health education Counselling Environ -mental health Rehabilitation Human relations	Nursing principles	None	Nursing practice Public health procedures	Special skills and knowledge

Interestingly, none of the definitions about the OH nurse used in this study originated in Britain. However, the RCN (1991) was recently agreed a definition but this was too late to be incorporated in this study. In the main study the ICOH's definition was found to be the most appropriate, with 46% of respondents identifying this definition as the most salient out of a choice of the three definitions. The second most salient definition identified was the AAOHN's (1987), with 24.7% of respondents identifying this one as most appropriate. The third most appropriate definition identified was written by the USDL, with 22.1% of respondents preferring this option. (*Table 5.20*)

The major difference in the definition supplied by the ICOH is that it focuses upon how OH nurses think about their work. In contrast the other two definitions provided by the AAOHN and the USDL focus upon what nurses are employed to do, that is, their purpose or the functional aspects of the job. The ICOH's definition also emphasizes the importance and special nature of individuality with regard to how OH nurses perceive their relationship with clients, and does not ignore the social or cultural context within which this relationship takes place. In contrast the other two definitions and especially that provided by the USDL, appear to be more mechanistic in nature, disregarding the humanistic aspects of the OH nurse in relation to his/her work with other people. (*Table 7.4*)

Table 7.4 Comparison of the definition of OH nurse.

Definition	ICOH-NC	AAOHN (1987)	USDL	RCN (1991)	Key persons
Qualification	OH nurse	Registered professional nurse		Qualified RGN with post registration specialised course in OH nursing	RGN RGN with OHNC/D
Purpose and practice	Perceives the workers as a total individual, treats his or her response to potential and/or existing adverse conditions, and considers the implications	for the purpose of conserving, protecting, or restoring the health	Gives nursing service under general medical direction which include first-aid dressings, keeping records of patients treated; preparing accident reports for compensation Carrying out programs involving health education, accident prevention, evaluation of plant environment, or other activities affecting the health, welfare, and safety of all personnel		Provide nursing care in the workplace. Promote physical,mental and social well-being. Prevent injury and disease.
Focus	Workers and their individual's family, social, cultural and economic life	Workers	Employees		People at work Workers Employees
Location		Employed by business, industry, or an organisation	Factory or establishment		Workplace
Knowledge					Nursing Legislation Health education Counselling Toxicology Industry hygiene Safety Epidemiology

7.2.4 Congruence between key persons and occupational health nurses perceived characteristics of occupational health nurses

The importance attached to personal characteristics thought to affect the effectiveness of the OH nurse appears to vary between key persons and OH nurses in some very interesting ways. *Table 7.5* outlines the personality characteristics studied, and the relative importance attached to them which is expressed in rank distribution. These characteristics merit special attention because both OH nurses and key persons used their opportunity to express an opinion about these facets of personality. OH nurses responded via the questionnaire and the key persons either mentioned this in the interview with the researcher or expressed their opinions through open ended questions in the questionnaire survey. The 14 characteristics considered here are: good communication skills, good management skills, independence, inquisitiveness, intelligence, inter-personal skills, empathy, maturity, a challenging nature, a sense of humour, good written and presentation skills, problem solving ability, efficiency and good nursing skills.

Table 7.5 Comparison of ideal characteristics of the OH nurse between key persons and OH nurses.

Characteristics	Key persons (No. in total)	Rank	OH nurses (%)	Rank
Good communication skills	10/31	1	74.2	1
Good management skills	9/31	2	33.6	7
Independent	6/31	3	35.2	5
Inquisitive	5/31	4	18.9	14
Intelligent	5/31	5	20.9	13
Inter-personal skills	4/31	6	61.9	2
Empathy	4/31	7	30.7	8
Maturity	3/31	8	25.0	12
Challenging	2/31	9	41.4	3
A sense of humour	2/31	10	35.7	4
Good skills in written and presentation	2/31	11	27.9	10
Problem solving	2/31	12	27.2	11
Efficiency	1/31	13	28.7	9
Good nursing skills	1/31	14	34.4	6
Total number	31	-	244	-

The three characteristics most highly appreciated by the key persons were good communication skills (rank 1), good management skills (rank 2) and independence (rank 3). In contrast, the OH nurses ranked the following characteristics highly: good communication skills (rank 1), inter-personal skills (rank 2) and a challenging nature (rank 3). Likewise, the three characteristics receiving the lowest ratings from the key persons (good nursing skills = 14, efficiency = 13, and problem solving = 12) were not the same as those rated by the OH nurses (inquisitiveness = 14, intelligence = 13, and maturity = 13).

Regarding the difference between ranks from both groups, the following characteristics represented the largest deviations, where the key persons rated characteristics more highly than did the OH nurses: inquisitiveness (difference = +10), intelligence (difference = +8) and good management skills (difference = +5). Conversely, the following characteristics represent the largest deviations in the opposite direction, where OH nurses rated characteristics more highly: good nursing skills (difference = -8), a challenging nature (difference = -6) and a sense of humour (difference = -6).

Regarding the similarities in rank order grades, allocated to the varying personality characteristics studied by both groups, those most similar were: good communication skills (difference = 0), empathy (difference = +1), good written and presentation skills (difference = -1), problem solving ability (difference = -1), and independence (difference = +2).

Thus, to summarise, it appears that key persons and OH nurses agree upon the relative importance of good communication, written and presentation skills; empathy; problem solving ability and independence with regard to effective OH nursing practice However they disagree on the relative importance of most of the other variables studied. It appears that key persons give more credence to attributes such as good management skills, inquisitiveness and intelligence, whereas OH nurses value attributes such as a sense of humour, a challenging nature and good nursing skills.

7.2.5 Relationships with community health nurses

In attempting to identify any divergent views between key persons and OH nurses regarding the relationship between OH nurses and community health nurses the relationship was studied in terms of five degrees of strength. For purposes of clarity the very strong and quite strong categories can be merged to indicate a positive relationship, while the last two categories of very little and none can be merged to indicate a negative relationship, with the "some contact" category corresponding to a neutral relationship.

Table 7.6 Comparison of the relationship between community health nursing and OH nursing between key persons and OH nurses.

Relationship	Key persons (No. in total)	Rank	OH nurses (%)	Rank
Very strong	14/31	1	18.5	2
Quite strong	2/31	4	18 5	3
Some contact	2/31	3	17.9	4
Very little	11/31	2	27.8	1
None	1/31	5	11.7	5
Total number	31	-	244	-

It appears from *Table 7.6* that slightly more OH nurses viewed the relationship with community health nursing as negative (39.5) rather than positive (37.0) but slightly more key persons expressed positive opinions (16/31) rather than negative ones (12/31). Overall, however it appears that in both groups of respondents' opinions are fairly arbitrarily spread between the five options, as are the corresponding ranks. Considering the key persons responses separately, the "very strong" response category was mainly endorsed by American respondents, whereas the "very little" response category was mainly endorsed by UK respondents. It is likely that this response difference reflects the external influence of different OH nursing education patterns in both countries. In the US, OH nursing education is considered as a sub-speciality within community health nursing, but in the UK community nursing education is completely separate from OH nursing education. This may also account for the relative responses of the OH nurses (all working in the UK), where only 37% considered the relationship between OH nurses and community nurses to be either very strong or quite strong. Most (63%) considered their contact to be minimal or non-existent. It therefore appears that the limited opportunity for communication, during education, between the two disciplines may explain why 63% do not have strong relationships with community nurses. It is probable that the remainder (37%) who report stronger relationships with community nurses do so because of their working environment or because of individual differences in communication skills.

7.3 Internal and external factors influencing occupational health nursing practice

Four internal and eight external factors thought to influence practice were ranked by OH nurses to indicate priorities in these issues, and ranked by the researcher in accordance with the qualitative analysis obtained from the key persons.

The four internal factors were: OH nurses' perceptions and beliefs, working environment, OH nurses' professional background and OH and safety team. Most of these internal factors of interest were ranked similarly indicating convergent opinions within both groups of respondents, namely the key persons and the OH nurses. The two most similar and highly ranked factors were: OH nurses' perceptions and beliefs and working environment. The two most similar but lowly ranked factors were: OH nurses' professional background and OH and safety team (*Table 7.7*).

Table 7.7 Comparison of the external influencing factors for OH nursing between key persons and OH nurses.

Influencing factors	Key persons (No. in total)	Rank	OH nurses (%)	Rank
Internal factors	***16/31***			
OH nurses' perceptions and beliefs	8/31	1	5/6[a]	1
Working environment	7/31	2	5/6[b]	1
OH nursing professional background	1/31	3	2/6[c]	3
OH and safety team	1/31	3	1/3[d]	3
Total number	31	-	244	-

[a] Five of the OH nurses' perceptions and beliefs indicator variables statistically significant (5 out of 6).
[b] Five of the working environment indicator variables statistically significant (5 out of 6).
[c] Two of the OH nurses' professional background indicator variables statistically significant (2 out of 6).
[d] One of the OH and safety team indicator variables statistically significant (1 out of 3).

The external factors are: policy (social and political) and legislation (EEC/UK), OH nursing education, socio-economic change based on the economic and financial situation, economic evaluation which includes cost effectiveness and cost-benefit analysis, health and environment issues, the industrial system which is influenced by working processes and technological changes, developments in industry and computerisation, the health care delivery system and the interdisciplinary competition between other nursing practitioners and other practitioners (*Table 7.8*).

Table 7.8 Comparison of the external influencing factors for OH nursing between key persons and OH nurses.

Influencing factors	Key persons (No. in total)	Rank	OH nurses (%)	Rank
External factors	***29/31***			
Policy and legislation	**13/31**	**1**	**73.9**	**4**
EEC/UK legislation	7/31		93.7	
Politics/Social policy	8/31		54.0	
OH nursing education	**9/31**	**2**	**74.9**	**3**
Socio-economics change	**8/31**	**3**	**82.8**	**1**
Economic/financial situation	6/31		82.8	
Social change	2/31		-	
Economics evaluation	**5/31**	**4**	**76.2**	**2**
Cost effectiveness	3/31		88.7	
Cost-benefit analyses	2/31		63.6	
Health and environment issues	**1/31**	**5**	**71.3**	**5**
Awareness of health and environment	1/13		94.1	
Ecology change	-		48.5	
Changing industrial system	**1/31**	**5**	**70.8**	**6**
Working processes/Technology changes	1/31		82.4	
Developments in industry	-		78.2	
Computerisation	-		51.9	
Health care delivery system	**0/31**	**7**	**51.0**	**7**
Interdisciplinary competition	**0/31**	**7**	**36.0**	**8**
Other nursing practitioners	-		45.6	
Interdisciplinary competition	-		26.4	
Total number	31	-	244	-

The three most similar and highly ranked factors were: OH nursing education which was ranked 2nd by key persons and 3rd by OH nurses, socio-economic changes which was ranked 3rd by key persons and 1st by OH nurses, and economic evaluation which was ranked 4th by key persons and 2nd by OH nurses. Interestingly, OH nurses viewed cost effectiveness as more important than cost-benefit analysis. However, key persons viewed both types of analysis as relatively equally important. The three most similar but lowly ranked factors were: interdisciplinary competition

which was ranked 8th by both groups of respondents; the health care delivery system which was ranked 7th by both groups of respondents; and equally the changmg industrial system and the health and environmental issues factor, where the first factor received a ranking of 5th from key persons and 6th by OH nurses, and vice versa for the health and environmental factor. Indeed this general pattern is similar to the trend found after statistical analysis which helped formulate the model which is discussed in detail in Chapter 8.

The major disagreement in ranking was related to policy and legislation. Here, the OH nurses rated the importance of this factor to practice as 4th, whereas the key person data indicated it's importance to be primary (1st). The possible explanation for this finding is that key persons may have more direct involvement with policy formulation and evaluation and may experience and believe policy and legislation to be more integrated than do OH nurses who may believe that their roles and functions are more influenced by legislation than by policy. This explanation seems plausible in the light of data indicating that more OH nurses rated legislation as of greater important than policy whereas key persons expressed a view that they were equally important.

With regard to the actual roles and functions of the OH nurse there were six main significant influencing factors were found to be "OH nursing education", "cost effectiveness of disease prevention and early detection", EEC or UK legislation, "better awareness of health and environment", "economic or financial situation", and "computerisation". (*Table 6.31* and *Table 6.32*)

The actual training role and actual function of record keeping and informing workers of health hazards were found positively influenced by "OH nursing education" The actual management and research role and actual function of health education and promotion, assessment of exposure and rehabilitation and resettlement were found negatively influenced by "OH nursing education". The actual health surveillance, health screening and education role were found positively influenced by "cost effectiveness of disease prevention and early detection". The actual therapeutic and research role and both of the actual functions of emergency treatment for accident and injury and immunisation were found negatively influenced by "cost effectiveness of disease prevention and early detection".

The actual function of health supervision of workers and health education and promotion appeared to be positively influenced by "EEC/UK legislation". The actual management role and actual function of occupational safety, informing workers of health hazards and co-operation with outside agencies also appeared to be negatively influenced by "EEC/UK legislation". The actual

emergency responsibility role and actual function of health screening, emergency treatment for accident and injury, and routine treatment were found positively influenced by "better awareness of health and environment".

The actual training role and actual function of assisting with psycho-social problems were found negatively influenced by "better awareness of health and environment". This was related to the actual function of individual counselling and record keeping and positively influenced by "economic/financial situation". The actual research role and actual function of assessment of exposure also appeared to be negatively influenced by "economic/financial situation". The actual health screening role and actual function of development and maintenance of records were found positively influenced by "computerisation". The actual training role and actual function of occupational safety, informing workers of health hazards were found negatively influenced by "computerisation". Furthermore, The actual function of familiarisation with work environment, first-aid training for workers, meeting and communication and specific health surveillance did not appear to be related to any significant with the external factors.

7.4 Occupational health nursing professional development

7.4.1 Main issues and problems facing occupational health nursing

From *Table 7.9* below, it can be seen that key persons and OH nurses ranked most of the items related to main issues and problems encountered in OH nursing similarly. However, two discrepancies were identified. First, with regard to the issue of 'lack of team work and acceptance of each other's abilities', key persons ranked this higher (4th) than did the nurses (8th). Therefore, it seems that key persons are more concerned than nurses about this issue. A possible explanation is that, because key persons have, in general, higher status positions and can be considered to have extended their role, they are more likely to be in direct competition with other team members who may also be qualified to carry out similar tasks. Such conflict would be expected to aggravate effective team work and lead to denunciation of each other's abilities if one person felt the other encroached upon their job specificity. The second discrepancy was concerned with the item: "lack of understanding of roles by employees", where the nurses were more concerned than were the key persons. A similar explanation may suffice, in that, employees may attribute a lower status to the nurse because of the often "task oriented" and repetitive nature of some areas of direct care given and received. Employees may not understand or appreciate the additional skills and knowledge that the OH nurse has, which may explain why OH nurses may feel undervalued and not understood by employees.

Table 7.9 Distribution of the main issues and problems of OH nursing according to key persons in different countries.

Main issues and problems	Key persons (No. in total)	Rank	OH nurses (%)	Rank
Economic recession	9/31	1	66.7	1
Lack of knowledge	6/31	2	55.6	3
Lack of understanding of roles by manager	5/31	3	58.8	2
Lack of legislation support	4/31	4	54.7	4
Lack of team work and acceptance of each other's abilities	4/31	4	4.5	8
Poor communication	3/31	6	15.6	6
Lack of recognized qualifications	2/31	7	10.7	7
Lack of understanding of roles by employees	1/31	8	30.9	5
Total number	31	-	243	-

7.4.2 The congruence between future concerns of key persons and occupational health nurses

When considering opinions about what the future holds for OH nurses, the views of OH nurses and of key persons were not dissimilar. The largest proportion of individuals in both groups of respondents ranked a positive opinion as their first choice (i.e. key persons = 21/31, OH nurses = 43.6%). However, a neutral opinion of the future was ranked second by 7 of the 31 key persons and third by 23.5% of OH nurses. This pattern was reversed with regard to a negative opinion of the future, where 32.9% of OH nurses ranked this opinion as 2nd and 3 of the 31 key persons ranked it as 3rd (*Table 7.10*).

Table 7.10 Comparison of what the future holds for OH nursing between key persons and OH nurses.

Future holds	Key persons (No. in total)	Rank	OH nurses (%)	Rank
Positive	21/31	1	43.6	1
Neutral	7/31	2	23.5	3
Negative	3/31	3	32.9	2
Total number	31	-	243	-

These responses from the OH nurses are similar to those expressed in the free format section of the questionnaire which are now discussed in more detail.

In general most OH nurses expressed some negative views about the future for OH nursing. This was illustrated by 32.9% of respondents expressing "a need to be realistic - the world of the OH nurses is far from safe and secure". In the free format section, the comments relating to "other nurse practitioners competition" were also negative. This suggests that OH nurses are concerned about their nurse role and felt threatened by other nurse professions. This could be a factor prominent in shaping the OH nurses general perception of the nurse. There were no positive comments relating to OH nursing professional issues, policy or legislation. Concerning economic issues in OH nursing, there were some positive comments, although the overall consensus appeared to be toward a negative feeling. There were mixed feelings relating to OH nurses' perceptions and beliefs, OH nursing practice, working environment and OH nursing education.

Most of the key persons believed that there was a positive future for OH nursing. This was in direct contrast to the beliefs of OH nurses. All the comments relating to OH nursing practice, the OH and safety team, and the health care delivery system, were also positive. Furthermore there were no negative comments relating to OH nurses' perceptions and beliefs, and policy and legislation. No positive comments were made concerning economic issues by key persons but some of them in the UK gave negative or neutral comments.. Concerning OH nursing professional issues, policy and legislation, although there were some negative comments, the overall consensus was for a positive future.

Like some of the previous statements categorised as perceptions and beliefs, items relating to professional issues were couched in terms of status, profile, awareness and professionalism. Nearly all comments were preceded by a "must" statement, which indicated the importance or necessity of the statement that followed. For example, one respondent stated that "We must have equal status with other nurses...", while another comment reflected the necessity of professionalism: "OH nursing must be made more professional...". One respondent brought up the issue and relevance of training to managers: "We must employ trained OH nurses - somehow we need to get through to management not to employ 'any nurse' ". A similar view was related by one OH nurse, who also expressed dissatisfaction with the limitations that were imposed by management and the apparent lack of value placed upon OH: "Regardless of what we learn or feel about OH nursing we may only practice as far as the company management and structure will allow. Consequently many OH departments are solely treatment based surgeries. It is (therefore) up to the professionals to keep 'nagging' away at management to 'educate' them into accepting OH for it's real value".

7.5 Congruence between key persons' and occupational health nurses' perceptions of educational needs

The concerns of key persons regarding the OH nurses education needs and OH nurse's regarding their educational demands were also revealed from the research findings. Comparison results are shown in *Table 7.11*.

Table 7.11 Comparison areas of continuing education for OH nurses between key persons and OH nurses.

Continuing education	Key person (No. in total)	Rank	OH nurses (No. in total)	Rank
Legislation	16/31	1	272	8
OH and safety	13/31	2	797	2
Managerial/administration	12/31	3	350	6
Communication/interpersonal skills	10/31	4	360	5
Clinical knowledge/skills	9/31	5	418	3
Professional issues	9/31	5	282	7
Research related	6/31	7	172	12
Health promotion	5/31	8	889	1
Screening/health assessment	2/31	9	369	4
Social concerns/problems	2/31	9	253	9
Managerial/personnel	2/31	9	160	11
Business skills	2/31	9	87	14
Teaching	1/31	13	153	13
Personal development	0/31	14	233	10
Total number	31	-	243	-

Table 7.11 showed that the four areas of continuing education most highly appreciated by the key persons were legislation (rank 1), OH and safety (rank 2), Managerial/administration (rank 3) and communication/interpersonal skills (rank 4). In contrast, the OH nurses ranked the following characteristics highly: health promotion (rank 1), OH and safety (rank 2), clinical knowledge/skills (rank 3) and health screening/assessment (rank 4).

Regarding the difference between ranks from both groups, the following continuing education represented the largest deviations, where the key persons rated characteristics more highly than

did the OH nurses: legislation (difference = +7), research related (difference = +5) and business skill (difference = + 5). Conversely, the following continuing education represent the largest deviations in the opposite direction, where OH nurses rated characteristics more highly: health promotion (difference = -7), health screening/assessment (difference = -5) and personal development (difference = -4).

Regarding the similarities in rank order grades, allocated to the varying areas of continuing education studied by both groups, those most similar were: OH and safety (difference = 0), social concerns/problems (difference = 0), teaching (difference = 0), and communication/interpersonal skills (difference = +1).

The issue of OH nursing education was perhaps the most contentious, with the second largest number of responses from the free format section of the questionnaire falling into this category. From the positive comments, the importance of education and attendance at professional courses was expressed, as well as a desire for further training which was also raised in the preceding section discussing economic issues. A number of different opinions were expressed with no overt value judgement attached to them (i.e. the neutral category). One respondent thought that both nurses and management should be educated about expectations. Others were more concerned about either prior experience or prior course attainment: "OH nursing is a continually developing area and I feel that entry to the speciality should require at least some community experience or at least a wide variety of experience". "It is absolutely essential for nurses to obtain OH qualifications before offering themselves for candidates for OH jobs". One optimist stated that: "In future I think there will be stricter rules on qualification and payment levels and therefore more qualifications needed".

Most of the negative comments were concerned with the structure of training courses in the UK. Most obvious were those relating to the problems that EN's experience when trying to convert their qualifications into ones that were relevant to OH nursing and recognised as such: "No future for EN's at the present. Unable to convert and remain in OH nursing. Years of experience wasted by current criteria for joining conversion course". "Will the Diploma be the only choice therefore excluding SEN's...?". "The OHNC and Diploma should be available for SEN's to study". "...would have continued in this field but I was unable to train - to convert to RGN...". Other negative comments referred to either dissatisfaction with having two qualifications - the certificate or the diploma, or difficulties upgrading one to the other: "Regarding qualifications for OH nurses I am not impressed with the Diploma versus Certificate situation. It really angers me!. "Unfortunately there are too few courses available, especially conversion from Certificate to Diploma".

7.6 Congruence between key persons' and occupational health nurses' belief in the need for a model

The majority of key persons (23 out of 31) agreed that there was a need for a model against which to develop practice. The reasons that key persons gave to support the use of a model to guide OH nursing practice. The need for a model was recognised for its ability to facilitate the standardisation of procedures and provide a framework for efficient and consistent practice. Furthermore, key persons believe that it enables the articulation and specification of work activities and permits future evaluative research and offers professional credence and security. The support for the use of models in OH nursing also indicates that research is having an influential effect on practice. The reasons for key persons (5 out of 31) rejecting the need for a model to guide OH nursing practice were as follows: The diversity of OH nursing practice prevents the application of any one model, thus standardisation would be inadequate and devaluing. Therefore non-theoretically bound practice involving central principles needs to guide OH practise. (*Table 7.12*)

The opinions of OH nurses regarding the application of OH models to guide practice, 38.5% of OH nurses agreed, showed that 45.5% rejected the need for a model, and 16% did not answer this question. There were five main reasons for supporting the use of a model: "to provide a basic guide or framework" (27.7%); "standardisation or systematic approach" (17.0%); "specialist different from general nursing" (8.5%); "let employers perceive the OH nurse's work" (8.5%); and "to set goal or ideal goal or direction" (7.4%). (*Table 7.12*)

It is clear that there is a difference in the extent to which key persons and OH nurses emphasised the need for a model to guide practice. A great proportion of key persons supported the application of a model to OH practice than OH nurses. Two reasons which may explain this difference of opinion were: an educational deficit on the part of OH nurses and the lack of application to practice. Historical the educational programmes received by OH nurses pays little attention specifically to OH nursing models. Furthermore, although 38.5% of OH nurses indicated a need for a model, nearly half of those were unable to indicate the most appropriate model. This suggests that at least half of the OH nurses were unfamiliar with models.

Table 7.12 Distribution of the reasons for needing a model to guide OH nursing practice.

Model for OH nursing practice	Key persons (No in total)	Rank	OH nurse (%)	Rank
Yes	23/31	1	38.5	2
No	5/31	2	45.5	1
Blank	3/31	3	16 0	3
Total number	31	-	244	-
Reasons for needing an OH nursing model				
Basic guide/Framework	5/23	1	27.7	1
Standardisation/System approach	1/23	2	17.0	2
Specialist different from general nursing	1/23	2	8.5	3
Let employers perceive the OH nurse's work	1/23	2	8.5	3
To set goal/Ideal goal or direction	1/23	2	7.4	5
Promoting good care	1/23	2	4.3	6
Isolation/Work alone	1/23	2	4.3	6
More efficient for practice	1/23	2	2.1	8
To develop the practice	1/23	2	1.1	9
Constantly changing and up to date	1/23	2	1.1	9
Continuous care	1/23	2	1.1	9
No answer	-		17.0	
Subtotal number	31	-	94	-

Table 7.13 Type of model identified according to key persons in different countries.

Type of model	Key persons (No. in total)	Rank	OH nurses (%)	Rank
Hanasaari model	9/11	1	36 2	1
Orem's model	2/11	2	14 9	2
Windmill model	1/11	3	1.1	3
Number of key persons	11	-	49	-

The majority of key persons (23 out of 31) agreed that there was a need for a model while only 11 key person indicated the name of model. 9 out of 11 UK and European key persons showed that the Hanasaari Conceptual Model was a appropriate one. Even though the Hanasaari Conceptual Model has been included in the English National Board (ENB) syllabus for the post-registration certificate in OH nursing since 1990, at present there is no practical model that defines or illustrates OH nursing practice in the UK. However the results of the analyses carried out in this research highlight that certain factors, labelled "influencing factors" effect OH practice. What is evident is the need for OH nurses to have some form of theoretical underpinning upon which

to base practice. Thus, education should provide the necessary tools for OH nurses to develop of practice appropriate to the environment in which they work. (*Table 7.13*)

In conclusion, a conceptual model may helped OH nurses to understand their practice requirements, or guided their actual practice. The overall response was that there was a lack of interest and understanding of conceptual models, hence there was a reluctance to use a model in actual practice. This was particularly apparent as models were not perceived as relevant to practice. This has a huge implications since a model attempts to direct practice and thus provide a theoretical underpinning. In turn, this then allows for the development and progression of practice through evaluative experimental research. This finding which has emphasised the need for a practical model.

7.7 Summary

A comparison between key persons and OH nurses was made in terms of ideal roles, of the six main responsibility areas only two reflected interesting discrepancies. This was explained by the fact that key persons and OH nurses hold different actual roles. For OH nurses there were two main differences between actual and ideal roles. This difference was explained in terms of nurses attempting to explain their roles. Two new definitions of OH nursing and the OH nurse were put forward as a result of condensing previous definitions and adding key persons and OH nurses findings. Key persons and OH nurses gave very different ideal characteristics for OH nurses, which were seen to reflect their different concepts of what an OH nurse should be like. Interestingly, there was also some conflict in the nature of the characteristics ranked by each group. For instance, key persons gave "inquisitiveness" a high rank whilst placing "problem solving" almost at the bottom. It would seem that there was some contradiction in terms. With respect to relationships between community health nurses and OH nurses, key persons and OH nurses in the UK indicated a less than optimum relationship. They said they had a weak relationship with community health nurses, in contrast to the US, where the greater amount of contact seems to facilitate a closer relationship between the two groups.

The perceived external influencing factors on OH nursing were similar for OH nurses and key persons except for three. This was explained by the fact that key person are more involved in policy and legislation whilst OH nurses are not, and OH nurses felt more threatened by economic recession.

The professional development of OH nursing was viewed in a positive light by key persons, whilst OH nurses were more negative. This was explained partly in terms of their direct involvement in OH nursing progression. OH nurses on the other hand were seen to be more realistic.

It appears that key persons and OH nurses agree the relative importance of OH and safety, communication/interpersonal skills, clinical knowledge/skills, professional issues. However, they disagree on the relative importance of most of the other variables studied. It appears that key persons give more credence to attributes such as legislation, managerial/administration and research related, whereas OH nurses value attributes such as health promotion, health screening/assessment and personal development.

Key persons were supportive of a need for a model in OH nursing which partly reflected key persons involvement in the academic side of OH nursing. OH nurses however had a lack of knowledge regarding OH nursing models and therefore did not perceive the practical necessity of a model. This highlighted a need for a flexible programmatic model and better education in relation to models guiding practice.

Chapter 8 Discussion

8.1 Introduction

This chapter focuses on topics of current OH nursing practice, factors influencing OH nursing practice and a new framework for OH nursing practice. Conclusions and recommendations are then drawn with reference to the findings from this study and are related to previous research where this is informative. The strengths and limitations of this study will also be addressed, and finally the need for further research will be indicated.

8.2 Current occupational health nursing practice

Evidence from this study suggests that OH nursing practice in the UK has not changed as dramatically in the last decade as might be expected, or indeed desired. The results of this study are very similar to those reported previously (i.e. Silverstone, 1982; Lim, 1983; Balcombe, 1983; and Sharp *et al.*, 1989). Regarding actual roles, the five most practised were health screening, health surveillance, emergency responsibility, education, and therapeutic role. (*Table 5.1*) These can be considered as direct care and secondary prevention work and are the most traditional and technical - requiring specific clinical skills. Interestingly, the management role, associated with higher level posts (*Table A1.7* in Appendix A1.) was found less frequently. Also, only a few OH nurses undertook the research role, which may be due to lack of knowledge and skill about research methods, epidemiology, statistics or computing skills.

Regarding actual functions the following ten were performed most frequently: emergency treatment for accident and illness, individual counselling, health screening, record keeping, health education and promotion, health supervision of workers, development and maintenance of records, provision of a routine treatment service, familiarisation with work environment, and meetings and communication. (*Table 5.2*) These functions also showed that the continuing focus on treatment and clinical skills, for example, emergency treatment for accident and illness, provision of a routine treatment service and health screening is very clinically orientated. Other responsibilities frequently performed including record keeping and development and maintenance of records are also principally administrative related to direct care. Interestingly, environmental oriented functions

are not overly apparent in this study, occupying three of the lowest five rating positions out of twenty, for distribution of functions.

These results are similar to those reported by Silverstone (1982) and Lim (1983) in the context of the activities of OH nurses over 15 years ago. In Silverstone's study (1982) the three main functions were described as caring for the sick and injured, counselling and administration. Similarly, Lim's (1983) study described the main services provided by OH nurses as medical examinations, screening procedures, counselling and administration procedures. Balcombe (1983) also found that over half of OH nurses' time was spent in direct contact with patients or clients, the major components of which were treatment and follow up, health supervision (e.g. health interviews, medicals and screening), administration (e.g. records), counselling and health advice, and rehabilitation and resettlement (e.g. assessment and work change). Regarding the actual time spent in carrying out certain activities, Sharp *et al.* (1988) identified that "traditional" types of OH nursing function such as treatment, administration and medical examination and screening were prioritised by the nurses studied. Over a six year period they found this pattern had not changed (1981 - 1987). A similar trend has emerged in the current study with the four roles most frequently practised being health screening, health surveillance, emergency responsibility and therapeutic role

Interestingly, there were fewer comments about OH nursing practice from the free format section of the questionnaire than expected. Although the issue of prevention in health care was raised by many respondents in this section. For some, the change from the traditional treatment-based system to one of preventive intervention was viewed as positive: "My job is to encourage workers and management to pursue a healthy work force and healthy environment. Legislation, publicity and a health-aware work force make that easy". However, for others, developing the OH service is more problematic. One respondent aptly stated that "... I'm finding change and development was a very slow process, not helped sometimes by my own confusion as to my priorities in practice".

It would seem therefore that, although, OH nurses expressed positive beliefs and perceptions concerning the move away from the exclusively treatment-based approach towards a more preventive one, they often found this more difficult to achieve in practice.

In an attempt to explain this apparent lack of current progressive practice it is necessary to consider the findings of this study retrospectively. First, lack of progressive practice was identified in three different ways: 1) by analysing the proportion of nurses who ranked the distribution of different roles which could be differentiated on the basis of traditional or progressive roles, 2) by

statistical analysis of the significant factors related to progressive practice, and 3) by responses from the free format section of the questionnaire. Second, having identified 1) that nurses ranked the actual roles of environment surveillance, consultant, management, research, as very low, 2) that management, research and environmental surveillance were not significantly associated with OH nursing practice, and 3) that nurses expressed dissatisfaction with various areas of progressive practice, it is possible to identify the precise elements of practice which are problematic with regard to progressive practice. Thus, the identified roles of environmental surveillance, management and research, with their concomitant responsibilities and functions are the areas of practice which OH nurses find problematic and which consequently hinder progressive practice. The internal and external factors influencing these core areas of OH nursing practice will be described in more detail below.

8.3 Main factors influencing occupational health nursing practice

It would appear that there is a lack of progressive work being carried out in the UK despite some OH nurses' frequently alluding to this issue, implying that the situation is otherwise. The influence of the internal and external factors which may provide an explanation for these findings. One of the major significant findings finding from this study, following a series of logistic regression tests, was the identification of four internal factors and twelve external factors. The two most important internal factors were found to be "OH nurses' perceptions and beliefs" and "working environment", and the rest two less important factors were "OH nurses' professional background" and " OH and safety team". The main significant external factors were found to be "OH nursing education", "economics evaluation" "policy and legislation", "changing industrial system", "awareness of health and environment issues", "socio-economic change" and the other less influencing factors were "health care delivery system" and "interdisciplinary competition". The relationship between these and OH nursing practice will be discussed detail in the following section.

8.3.1 The influence of occupational health nurses' educational and professional background on practice

Several professional background factors were found to be significantly associated with OH nurses' actual functions. The most significant influencing factor was found to be a professional qualification. Those nurses with an OHND qualification had significantly more responsibility for rehabilitation and resettlement. (*Table A1.18* in Appendix A1.)

Another significant influencing factor was the nature of OH nurses' previous hospital experience which was found to be significantly associated with their actual roles and actual functions. Previous intensive care experience was found to be significantly positively associated with the assisting with psychosocial problems function. Similarly, previous orthopaedics experience was found to be significantly positively associated with the first-aid training for workers function. In contrast, previous gynaecology, accident and emergency, and orthopaedics experience were found to be significantly negatively associated with the roles of therapeutic and training, and the functions of assisting psycho-social problems (*Table 6.36* and *Table 6.37*).

The nurses' professional background including qualifications and experiences is likely to determine what they consider as the main tasks of their work. Project 2000 (UKCC, 1989; RCN, 1990) has provoked a large change in nursing education, with its attempt to move nursing towards a health focus. However the majority of the OH nurses lack any education or experience about preventive and promotive health care in their basic nursing education and few OH nurses have had community health nursing experience. They will therefore, inevitably, use the medical model in their job with its emphasis on sick care. This is borne out by the fact that previous hospital experience in gynaecology, accident and emergency, and orthopaedics department negatively influenced OH nurses' involvement in therapeutic and training role and assisting psycho-social problems with workers.

The basic principles of nursing are similar in all fields of nursing in hospitals, the community or the workplace. However additional knowledge is needed by OH nurses. They need to understand the changes occurring in work, workplace and working life, and in lifestyles. In addition, they need to be able to recognise, control and prevent the health risks caused by these changes.

With regard to education it is frequently stated that the "education" process as opposed to the "training" process utilises concepts and theories which then enables individuals to apply specific principles to practice. Education is associated with the concept of change. Very few OH nurses' in the UK have attained sufficiently advanced educational qualifications to enable them to cope with the fundamental changes required to develop a progressive OH service. Lack of financial aid to support such education and to promote the role of the OH nurse may also contribute to this situation.

Further support for the role of education and its application to practice comes from the US where it is apparent that the OH service provided is very different from that in the UK - in general it appears to be more progressive and less traditional. Christensen *et al.* (1985) identified policy and

operational level involvement as major responsibilities of the master's prepared OH nurse in the US, where the highest policy level involvement was concerned with health promotion and education, and programme development. The higher operational level of responsibility involved health education, promotion, assessment and surveillance as well as primary care and programme development. This level of responsibility was associated with the number of credits obtained on certain managerial and physical assessment skill courses.

In an American study, Cox (1985) established that approximately three quarters of RNs with either a baccalaureate or masters degree in the US were involved in management and approximately half were involved in budget planning. Furthermore, a large percentage were encouraged and compensated for participation in further education programme by their employers. This level of managerial responsibility and knowledge is not commonplace in the UK, where a recent study entitled "Perceptions of continuing education needs of OH nurses" (Dorward, 1991) illustrated that the three most highly rated areas of continuing education needs were OH, health promotion, and health and safety legislation. There was no mention of anything related exclusively to management related issues, such as policy and operational decision making or budgeting. The quality of services provided by large numbers of members of the AAOHN in the US is possibly superior to the general service provision by nurses in the UK, since such a large proportion of AAOHN members on OH practice acquire additional qualifications. In a recent Annual Report of the AAOHN (1992) it was reported that nearly half of all OH nursing members had achieved higher education to the level of baccalaureate, master or doctoral degrees. This is an impressive figure considering that sample size of 12,148 was used to calculate these percentages implying that over 5,000 have additional qualification, whereas Dorward (1988) estimated that only 0.8% of 4,130 OH nurses (under 40 individuals) had attained a nursing degree qualification in the UK.

It therefore appears at a cursory glance that OH nursing in the US is more progressive, with regard to preventive practice, than in the UK, and that this may be related directly and/or indirectly to the educational preparation of OH nurse's.

8.3.2 The influence of occupational health nurses' perceptions and beliefs on practice

With regard to the actual roles of the OH nurse, in general the corresponding ideal role (the perceptions and beliefs about that role) influenced practice related to that role. There were however three main exceptions. The actual environment surveillance role, the management role and the research role were not influenced significantly by OH nurse perceptions and beliefs.

Similarly, with regard to the actual functions an OH nurse performs, the greatest internal influencing factor was found to be OH nurse's perceptions and beliefs about ideal functions,

corresponding directly to each particular actual function considered. There were four exceptions to this general pattern related to regarding: the actual function of rehabilitation and resettlement, the actual function of general health surveillance, the actual function of familiarisation with the working environment and the actual function of assisting with psychosocial problems. The functions of familiarisation with the work environment and assisting with psychosocial problems did not appear to be related to any significant perception or belief. However, the rehabilitation and resettlement function appeared to be negatively influenced by perceptions and beliefs. This was related to the ideal function of meetings and communication and positively influenced by perceptions and beliefs about the ideal role of rehabilitation and resettlement. It also appeared to be negatively influenced by the unique qualities of OH nursing. The actual function of general health surveillance appeared to be influenced by perceptions and beliefs about the ideal function of occupational safety.

Thus combining the findings cited above, it is apparent that there are three roles and two functions that do not appear to be influenced by perceptions and beliefs. To summarise, the roles are environment surveillance, management and research; and the functions are familiarisation with the working environment and assisting with psychosocial problems. Interestingly, they can all be considered to be non-traditional roles and functions.

In attempting to explain these findings it seems likely that the lack of education, knowledge, skill attainment and experience are pertinent and might affect the formation of perceptions and beliefs significantly related to actual practice in term of roles and functions.

Thus if OH nurse's have gained "enough" education, knowledge and experience for certain roles and functions then it seems more likely that their perceptions and beliefs will be relevant to inform and influence practice. Conversely, if knowledge and skills are not sufficiently internalised or are indeed absent, then any perceptions and beliefs related to these issues will not be significantly relevant to that function or role. This explanation coincides well with the literature on reflective practice, which extols the virtues of internalising educational experiences. It is also consistent with the psychological literature describing the function of perceptions and beliefs in relation to behaviour ie, practice (for example, Azjen and Fishbein, 1977).

Many nurses commented upon their concerns about the profile of the OH nurse, and viewed the need for change in a "positive light". But many revealed apparent difficulties in fulfilling their expectations and making progressive changes. It is also possible that even though many nurses acknowledge that change is necessary change may elicits a fear reaction and probably prevents

the necessary actions being taken. Therefore, one can conclude that resistance to change probably come from within the profession and not due to other outside influences. Also, since change is often associated with stress and uncertainty, the personal benefits of changing one's practice may seem remote. Other probable stresses associated with "progressive-practice" change include role conflict and overlap with other team members such as the safety officer (Alston, 1990), physician (Bates 1975; Katzman 1988), and hygienist. Some nurses may prefer the comfort of the present situation as opposed to the potential discomfort of developing new relationships and possible problems.

Regarding OH nurses' perceptions of the causes for the lack of professional recognition, two major themes emerged from the quantitative data. (*Table 5.34*) First, a significant proportion of nurses perceived a lack of understanding from managers and colleagues regarding their role, and second, but more specifically, they perceived a lack of understanding of the unique role played by nurses within the multidisciplinary team. These two major themes of lack of understanding portrayed by others towards OH nurses may be related to the lack of others knowledge, and more likely to the lack of legislation supporting the promotion of OH in the workplace and to the lack of recognised qualifications. Therefore, it seems likely that to enhance professional recognition and the OH nurses' profile, changes in both legislation and education are required, and are equally important.

The suggestion by some respondents that the wearing of a uniform would be an issue to consider changing is an interesting one. This feeling from respondents may be can reflect that how OH nurses see themselves. Given that OH nurses do not always work with sick individuals and therefore do not need protection from infection, it is appropriate to consider the advantage and disadvantage of wearing a uniform in the OH context. Some nurses expressed the opinion that the uniform is a symbol of professionalism and aids easy recognition and therefore raises their profile. However, other arguments have been forwarded in favour of removing the uniform altogether. As aptly reviewed by Sparrow (1991) the uniform has historical origins relating to the military, church and domestic service occupations from which nursing has been associated. While the buckle, badge and belt denote rank, the cap and apron symbolise servility and subservience. Beckenham *et al.* (1983) stated that "— the right not to wear it is the mark of high status granted only to senior nurses and medical consultants". The most strongly expressed opinion is that the uniform is used by nurses to hide behind, as it provides a degree of anonymity, and therefore lowers the individual's profile. The important issue here is that the individual nurse should be able to project his/her own personality, skills and knowledge into their working environment and thereby enhance the profile of OH nursing.

Important attitudes would therefore be confidence in one's ability, assertiveness, along with good communication skills and creativity. These factors may well differentiate those nurses who would prefer to retain only the "traditional" aspects of the job, in contrast to those more interested in expanding their role. It may be that those wishing to keep the uniform actually spend more time in the "care and treatment" role than in other roles such as managerial, advisory or the research role, where clearly the need for a uniform is not so apparent. Also the uniform may be associated with emotional safety, in that it may reflect situations inherent in the training environment of the hospital, where professionals frequently use the uniform to distance themselves from patients and relatives in an attempt to protect their own emotional "safety".

8.3.3 The influence of working environment on practice

Findings from this study indicate that the most influential internal factors, influencing practice related to the working environment, were OH policy and the number of employees in the workplace. The latter is approximately equivalent to the size of the organisation. (*Table 6.33* and *Table 6.34*) The EMAS's survey (1976) also found the size of the firm to be a dominant factor, where small firms (employing up to 250 workers) do not provide a service other than perhaps a doctor on call. In contrast, larger firms (employing over 1,000 workers) often employ both doctors and nurses. However, McKechnie's study in 1983 found no significant relationship between the number of functions performed and any of four factors studied (size of organisation, type of business, length of OH experience, level of medical supervision). A possible reason for the different results may be due to the fact that in McKechnie's study only one-nurse units were analyzed which may have biased the author to examine only these four factors.

Interestingly, the internal factor of OH policy related to a protocol covering emergency situations within the working environment was found to be significantly and positively influenced by the actual function of emergency treatment, but negatively influenced by the actual function of informing workers of health hazards.

Similarly, the internal factor of OH policy, related to inter relationships within the community, was negatively influential with regard to the actual function of first-aid training for workers. Regarding the OH policy of ethical and legal aspects of practice, this internal factor positively influenced the actual role of consultant. Thus, it appears that OH policy provision may a very important aspect in relation to the working environment within OH practice. (*Table 6.33* and *Table 6.34*)

Other comments from respondents, concerning the working environment, related mainly to issues of communication. Positive statements about elements of the working environment were explicitly mentioned as important: enjoyment, challenge, support and good atmosphere. The most prevalent negative comment mentioned related to isolation. For example one respondent stated that "Professional isolation has always been a problem with Occupational Health Nursing...". The only other two negative comments were concerned with the decreasing relationship with an employer and stagnation in small units. Although only two statements were made about the effect of working in either small or large units, it seemed that larger units may have been viewed more positively. This was in terms of job prospects and career opportunities, where smaller units were viewed as being less enterprising and stagnant.

Employers' and employees' expectations for the roles and functions of OH nurses may not correspond with those held by the nurse, and may therefore hinder progress and change. The recent study by Yoo (1993) revealed that expectations differed among nurses, employers and employees in some fundamental ways. With regard to care and treatment, employees held significantly higher expectations than did both nurses and employers. In contrast, the employee and the nurse held higher expectations than did the employer with regard to preventive health service. Interestingly, for other services such as visits to the workplace, employee rehabilitation and towards an expanded service nurses also held higher expectations than either the employer and/or the employee. Indeed it may be more pertinent to suggest that education is directed toward these groups as much as to the nurses themselves.

8.3.4 The influence of relationships within occupational health and safety team on practice

The four OH and safety team members who are most commonly contacted by OH nurses were found to be medical officers, nursing colleagues, safety officers and managers. (*Table 5.30*) Results from this study indicated that in general OH nurses were reasonably satisfied with the professional relationships within their departments. The majority of respondents reported "co-operative", or "professional" relationships as prevalent. Only four respondents described their relationship as unprofessional or disorganised. (*Table 5.29*)

The best relationships reported by OH nurses members of the OH and safety team were enjoyed with nursing colleagues and medical centre attendants. In contrast, the poor and business-like relationships with the team members were with the "manager" and "safety officers". (*Table 5.31*) From this result it seems that there may be some role conflict between the OH nurses and the manager and safety officers. Other evidence of dissatisfaction with relationships was identified by

31.6% of OH nurses, in that they were dissatisfied with "feedback on your work from your manager". (*Table 5.8*)

Although only a few respondents reported poor (unprofessional or disorganised) relationships within the OH and safety team it seems that some conflict exists with managers, safety officers and medical officers. Evidence from the main issues and problems of OH nurses' work were found to be the "lack of understanding of our professional and unique role in the multidisciplinary team from manager" and "lack of understanding of roles by colleagues". (*Table 5.34*)

Regarding OH nurses' working relationships in the UK, the key persons survey results suggested that the most positive responses were directed towards other nurses and medical centre attendants who had been categorised as co-operative and professional. Managers and safety officers were, however, mostly rated as having poor or business-like relationships with OH nurses. Despite the indication that the most frequently contacted OH and safety team member was the medical officer, it was surprising that the relationship depicted between them was not more positive. (*Table 4.24*)

However, considering the number of concerns raised by respondents about isolation in the working environment, it was surprising to find that hardly any respondents freely mentioned their work colleagues, be it other nurses or other professionals, when given the opportunity in the final page of the questionnaire. Indeed, there was only one comment exclusively reflecting a positive relationship: "I am treated with respect by management and the work force..." This related to the manager and the work force, neither of which can be considered members of the OH and safety team. One OH nurse stated that the only regular professional contact she/he had was with the Regional Medical Officers who visited twice a week. It would be interesting to pursue this issue further in order to identify what the concept of an "OH and safety team" actually means to most OH nurses.

In fact, conflict of role expectations between members of the OH and safety team was one of the findings in Dorward's (1988) study. This study compared managers and nurses, who were required to rate the importance of a specified set of nurse functions. The results indicated significant differences in expectation concerning the functions of health promotion, liaison and co-operation, health supervision, accident prevention and counselling; most of which can be considered as non-traditional aspects of OH nursing.

A report by Balcombe (1983) indicated good working relationships between British OH nurses and colleagues, consistent with the findings in the current study. She found that personal attitudes

of co-operation and understanding, and a desire to limit encroachment into the area of environmental safety, was associated with role extension. Most respondents in the Balcombe (1983) study appreciated the importance of two personality factors: flexibility and receptivity to future professional advancement. Thus co-operation between team members in the NHS rather than competition was viewed positively. However, some respondents raised concerns about the management/union relationship and how this affected the status and autonomy of the OH nurse, if seen as interfering. Further concerns were raised about OH physicians in that they too were through of as unable to influence unions and management. This specifically concerned the competencies of the OH nurse, although they apparently supported and appreciated the role of the OH nurse. With regard to safety officers, it was apparent that they were reluctant to accept the extended role of the OH nurse. The major conclusion reached in the study was that there was a "lack of any common team approach to health and safety" (Balcombe, 1983). Further research into role conflicts and the concept of team work is clearly warranted.

There are few studies concerning the relationships between OH nurses and other health professionals and how OH nurses play their role in the OH and safety team. An American study by McGovern *et al.* (1985) found that working relations between OH nurses and physicians were 80% very satisfactory and 11% very dissatisfactory, and between OH nurses and managers 84% very satisfactory and 12% very dissatisfactory. Alston (1990) indicated that role overlap occurred where a team approach was required and communication problems were highlighted as a difficult area. It was found that cooperative efforts were more in evidence than conflict situations.

8.3.5 External factors influencing occupational health nursing practice

Initially there were 12 significant external factors identified. These were then reduced to eight factor groups, they were "OH nursing education", "policy and legislation", "economics evaluation", "changing industrial system", "awareness of health and environment issues", "socio-economic change" and the other less influencing factors were "health care delivery system" and "interdisciplinary competition". The policy and legislation group was comprised from the previous factor groups of politics/social policy and EC/UK legislation. The economic evaluation factor group was comprised from the previous groups of cost effectiveness and cost benefit. Similarly, the changing industrial system group includes the prior groups of computerisation and the working processes and technology changes. Finally, the socio-economic factor group includes the economic/financial situation and social change factors.

In order of significance, the following factors were found to be the most important in relation to OH nursing practice: 1) OH nursing education, 2) economic evaluation, 3) policy and legislation,

4) the changing industrial system, 5) awareness of health and the environment, and 6) socio-economic change. The least influential of the factors associated with OH nursing practice was the health care delivery system and the interdisciplinary competition.

The actual training role and actual function of record keeping and informing workers of health hazards were found to be positively associated with "OH nursing education". The actual management and research role and actual function of health education and promotion, assessment of exposure and rehabilitation and resettlement were found to be negatively associated with "OH nursing education".

The actual function of health supervision of workers, health education and promotion, and rehabilitation and resettlement appeared to be positively associated with "policy and legislation". The actual management role and actual function of occupational safety, informing workers of health hazards, co-operation with outside agencies, and general health surveillance it also appeared to be negatively associated with "policy and legislation".

The actual health surveillance, health screening and education role were found to be positively associated with "economics evaluation". The actual therapeutic, emergency responsibility and research role and both of the actual function of emergency treatment for accident and injury and immunisation were found to be negatively associated with "economics evaluation".

The actual health surveillance and health screening role, and actual function of development and maintenance of records were found positively associated with "changing industrial system". The actual environment surveillance and consultant role and actual function of occupational safety, informing workers of health hazards were found negatively associated with "changing industrial system".

The actual emergency responsibility role and actual function of health screening, emergency treatment for accident and injury, and routine treatment were found to be positively associated with "better awareness of health and environment". The actual training role and actual function of assisting with psycho-social problems were found to be negatively associated with "better awareness of health and environment".

The actual function of individual counselling and record keeping was positively associated with "socio-economic change". The actual research role and actual function of assessment of exposure also appeared to be negatively associated with "socio-economic change".

The actual education role and actual function of individual counselling were found to be positively associated with "health care delivery system". The actual consultant role was found to be negatively associated with "health care delivery system". Finally, this was related to the actual function of routine treatment and informing workers of health hazards positively associated with "interdisciplinary competition".

In attempting to explain these findings it seems likely that the lack of education, cost effectiveness and legislation support are pertinent and might affect the actual practice in term of roles and functions. Thus if OH nurse's have gained "enough" education, knowledge and experience for certain roles and functions then it seems more likely that their perceptions and beliefs will be relevant to inform and influence practice.

Regarding the role of management, research and environmental surveillance and their associated responsibilities and functions, it was not possible to identify any particular internal influencing factor after "personal" confounding factors were adjusted. However, the role of management was found to be negatively associated with the external factors "OH nursing education". Also the role of research was found to be negatively associated with "OH nursing education" and "economic evaluation". Finally, the role of environment surveillance was found to be associated negatively by the "changing industrial system".

One international comparative study (Rossi, 1987) gave useful exploratory hypotheses for the external factors influencing OH nursing practice. It was suggested that the following aspects seemed to play an important part in the extent to which OH nurse's work and maintain independence in different countries: the level of education, national legislation on OH and safety issues, general state of health and social services in the country, connections with primary health care, stage of development of the country, quantity and education of other staff in OH care. The findings from the current study (described above) appear to be closely related to the hypotheses discussed in this study.

In an interesting study concerning the economic recession in the UK, Sharp *et al.* (1989) aimed to compare how OH nurses perceived their roles in 1987 and in 1981, and how changes in industry and economy influenced OH nursing practice. Due to the economic recession the traditional industries employed less OH nurses than previously while the NHS appeared to be the leading employer of OH nurses in the South West districts. However, there were expansions of the nurses' roles including traditional health care, the prevention of diseases and the control of working environment. Although this study showed that the distribution of OH nurses changed, the

OH nursing practice gradually expanded. This can reflect that economic changes influenced OH nursing practice indirectly due to more cost-effective situations. The findings from the current study also appear to support this indirect association between economic change and nursing practice.

Another study (Chang, 1992) may provide some information about external factors influencing OH nursing practice. A national survey in Taiwan showed that the five most frequent roles were emergency responsibility, consultant, education, therapeutic care and health screening. In comparison with the current study, this survey demonstrated that OH nurses in Taiwan undertook more consultant, emergency responsibility and therapeutic roles, but practised less health surveillance, health screening, environmental surveillance and training roles. These discrepancies represent the different stages of national development because in Taiwan there is less awareness of health and environmental issues, less priority and coverage in legislation and governmental policy, no national health service, more industry than service and agriculture, and insufficient OH nursing education. Thus, OH nurses in less developed countries would perform more traditional curative-oriented service than those in more developed countries. This study provides further insight into important cultural and international aspects influencing practice, but further research is required before any definitive hypothesis can be forwarded.

8.4 A new framework for occupational health nursing practice

8.4.1 Previous models for occupational health nursing

As mentioned in Chapter 1 many authors (Gries, 1980; Dees, 1984; Morris, 1985; Ossler, 1990; Wilkinson, 1990; Alston, 1990; Lundberg, 1992; Maciag, 1993; Yoo, 1993) have provided a framework or conceptual model for OH nursing. There are some common weaknesses in these models for OH nursing. These include lack of clarity in the scope of OH nursing practice, lack of a clear definition of the OH nurse' role, and lack of empirical evidence. (Appendix D3.)

A key issue to be addressed in any is its ability to reflect the scope of practice and its to the application area. Only four existing models describes clearly the scope of OH nursing practice. For example, Dees (1984) defined the scope of practice as environmental monitoring, health surveillance, primary care, health and safety education, and research; Ossler (1990) it defined it as administration of OH, provision of health care, counselling, health education, collaboration with OH and safety team, environmental surveillance, communication, loss control management, consultation, education and training, research, and referral; Alston (1990) defined it as care,

promotion, prevention, team work, research and value; and a recent model in the UK by Yoo (1993) defined it as traditional service as including care and treatment, health examination, and health records, and non-traditional service as including visits to the workplace, preventive health services, employee rehabilitation and expanded services.

The lack of a clear definition of the OH nurse's role in the previous studies could result in ambiguity when nurses attempt to interpret their role in practice. None of the studies give any clear definition of what is meant by the concept of the "role" of the OH nurse, or make it distinct from either "functions" or "activities" carried out by the OH nurse (Gries, 1980; Dees, 1984; Ossler, 1990; Wilkinson, 1990; Alston, 1990; Maciag, 1993; Yoo, 1993). Roles were grouped by the investigator to represent aspects of OH nursing practice. Finally, almost all the conceptual models studied are based on theories or concepts rather than using empirical evidence. Only one model (Yoo, 1993) attempted to answer researchable questions. This may limit the application of these models to real life.

8.4.2 New framework and definitions for occupational health nursing practice

A new framework for occupational health nursing practice

The debate about whether OH nurses need models or frameworks to guide OH nursing practice continues. However, it is clear that if a model is to guide good practice, it needs to be more realistic and adaptable to any OH nursing situation in which a OH nurse using it finds him/herself.

A new framework resulting from this study (*Figure 8.1*) has been constructed from the empirical evidence obtained. Each of the two main sectors of the framework (i.e. practice itself and its influencing factors) was tested against each of the others using the quantitative data and was then justified and modified using the qualitative data. Therefore it can be said that the new framework developed from this study adds further weight to the body of evidence concerning OH nursing practice.

The purpose of the framework was twofold: first, to define the scope of OH nursing and second to identify the internal and external influencing factors affecting practice. The concept behind the development of this framework is a dynamic system, whereby components at one level are related to components at other levels. Considering the diversity of OH nursing, the framework developed in this study organises the elements that constitute OH nursing in a comprehensive way. This framework can be used by OH nurses for their practice and education. One of its strengths is its simplicity, in that it is easy to understand on a conceptual level and it is not complicated by

numerous levels or subsections. It is visually appealing with only 3 levels: the core OH nursing practice level, the internal factors level, and the external factors level. Furthermore, the number of components in each level are not too large, and the terminology enables easy comprehension. The six main components of the core element of the OH nursing practice level are the general responsibilities of the OH nurse. These are promotion, protection, prevention, care, management and research. Each of these components can be further sub divided into specific responsibilities, roles and functions (Appendix A2). Within the second level of the framework four internal factors influencing practice are described. These are the working environment, the OH nurse perceptions and beliefs, nurses professional background and the health and safety team. In contrast, the external influencing factors affecting practice are more numerous. Eight components are identified: OH nursing education, policy and legislation, economic evaluation, the changing industrial system, health and environment issues, socio-economic change, the health care delivery system, and interdisciplinary competition.

This framework is intended for OH nursing use only. Its most appealing feature is that it is not static, but dynamic. It can be used by different OH nurses, at different times, in different places (i.e. different organisations, countries and cultures) to look at a variety subjects and topics. It can also be used to investigate the effects of various events, such as economic recession, policy and legislation changes or different health care systems. Because of the fluidity of the framework, the level of investigation or explanation can be either general or more specific, depending upon the situations. It should be possible using this framework to study any area of OH nursing practice.

New definitions for occupational health nursing and nurses

New definition have been developed from the research findings of this study. Compared with the different definitions of OH nursing described in other studies, these definitions have resulted directly elements in the structure of the new framework. First, to define occupational health nursing:

"Occupational Health Nursing is a specialist strand of nursing which is concerned with promoting, protecting, conserving, and restoring the health and well-being of people at work. It requires the application of nursing and public health principles and procedures to prevent ill-health, injury and disability. Its practitioners need special knowledge of and skills in: nursing, public, occupational and environmental health sciences, occupational hygiene, safety, epidemiology, toxicology, legislation, education, management, communication, business, marketing, rehabilitation, human relations and counselling."

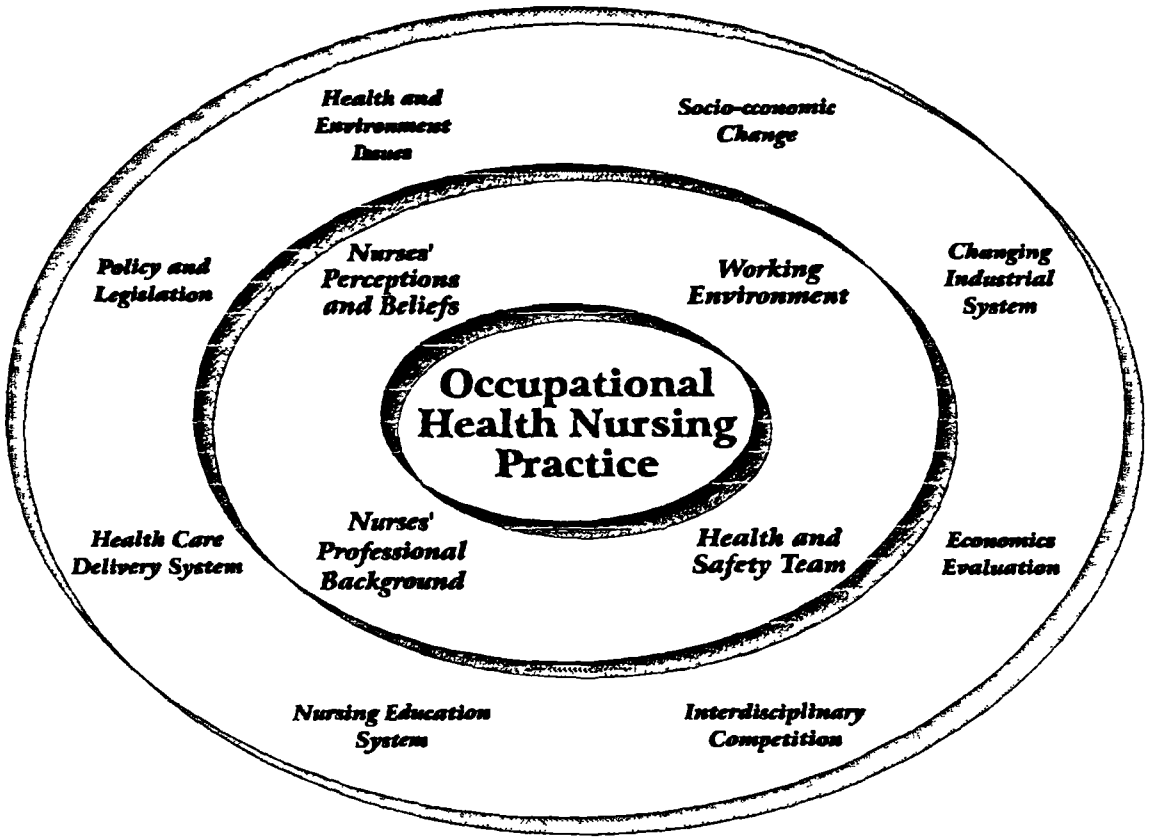
This definition incorporates the specialist aspects of OH nursing, and the unique features of OH nursing that have emerged from the results of this study.

In an attempt to provide a more precise and succinct definition of the OH nurse, the qualifications, roles and functions as identified in this study have been incorporated to produce a new definition as follows:

"An Occupational Health Nurse is a Registered General Nurse with a specialist qualification in occupational health nursing recognised by the appropriate national nursing authority. She/he aims to provide a service to predominately healthy working people, to prevent injury and disease, to promote physical, mental and social well-being and health care at work, in the working environment and working life."

The importance of establishing appropriate definitions, of both OH nursing and of the OH nurse, is apparent when consideration is given to the factors that differentiate OH nurses from general nurses and likewise differentiate their practice. For example, regarding differences in the practice of OH nursing compared with general nursing, the most salient contributory element was the emphasis on working with healthy adult people to prevent disease and injury occurring as a result of work and work environment. These important elements are clearly reflected in the new definitions of OH nursing and OH nurse outlined above. Moreover, in making definite the nature of OH nursing and what an OH nurse is, controversies and questions can more easily dealt with and answered. This is an important issue given the degree of unease expressed by OH nurses concerning their profile, job satisfaction and competition with other health professionals.

Figure 8.1 A dynamic framework for OH nursing practice.



8.5 Strengths and limitations of the study

8.5.1 Strengths of this study

In comparison to previous studies, the current study has certain strengths which include the size and representativeness of the main sample, validity of generalisation - through comparing the response and non-response groups, adequate attention to potential confounding personal factors, and the construction of a model based on empirical data - both quantitative and qualitative.

The representativeness of the sample

In Dorward's study, 10% of 4,130 nurses were randomly selected from lists held by the government's Employment Nursing Advisors. Since they were all known by the EMAS, they were probably the best cross section representing OH nurses in the UK compared with the studies done previously. With regard to the general characteristics of gender, age and marital status, the current subject sample was similar to that reported by Dorward (1988) in her study. It is therefore assumed that the current sample can also be considered as truly representative of the population of OH nurses. (*Table 5.3* and *Table 5.5*)

The validity of generalisation - comparing the response and non-response groups

A second strength was that the difference between the response and non-response groups was compared. This was achieved by sending a short questionnaire to the non-response group of OH nurses in order to collect general information. Fortunately, there were no statistically significant differences in general characteristics (e.g. demographic details, statutory qualifications, OH nursing certificate or diploma, hospital nursing experience, community nursing experience, and time spent in OH nursing), current job (e.g. level of post, duty pattern, working hours per week, income per year, and time spent in current post), OH nursing practice (e.g. actual roles, actual functions, and activities), and OH nurses' perceptions (ideal roles and ideal functions) among the respondent and non-respondent groups. (*Tables 3.4* to *Table 3.10*) Therefore, the response group can be considered to be a representative sample applicable to Britain as a whole.

Adequate attention to potential confounding factors

In the literature review, none of the previous research controlled for personal factors such as, age sex working status, and working hours. These variables were confounding since they influenced OH nurses' perceptions and beliefs and OH nurses' practice. This study controlled for these personal factors by employing a logistic regression test, which addresses.

Constructing a model based on empirical data

A further major advantage of the current study was that several factors were considered simultaneously. This was in order to determine the extent to which each influenced OH nursing practice and to illustrate the relative importance of each of these. In previous research, many studies have attempted to identify influencing factors, however they have only considered one factor at a time. Furthermore, these studies or surveys tended to be descriptive rather than analytical.

The previous literature concerned with OH nursing issues has tended to be formulated from descriptive studies. Therefore there has been a lack of scientific evidence and much use of subjective or personal opinions. This has left little room for logical interpretations or explanations about this important nursing speciality. The present research endeavoured to adhere to scientific principles. Thus results were statistically tested and interpreted according to set hypotheses. Furthermore, the data were discussed in relation to the hypotheses and the research questions. The evidence to support the opinions purported by this study stemmed directly from the research undertaken, whilst also acknowledging previous findings.

8.5.2 Limitations of the study

The limitations of this study became apparent through the course of the research. These may be summarised as follows: the accessibility of the study population; the survey questionnaire format; and the limited interpretability of the external influencing factors on OH nursing practice. These are discussed below.

Accessibility to study population

Scottish, Northern Irish, English and Welsh local groups of RCN-SOHN were approached. Due to the concern of confidentiality, the Scottish and Northern Ireland groups declined to participate in the study. Therefore the inferences drawn from the data were confined to the English and Welsh groups. Nevertheless, a very wide geographical area was covered. As the sample was derived form local groups of OH nurse members. The survey results may not necessarily represent those of non-RCN members among OH nurses, perhaps those less committed to professionalism who do not belong to any professional association.

Survey questionnaire format

The format of the main study questionnaire primarily used closed-end questions albeit derived from the literature review and key persons. This may potentially have limited the scope of

information provided by respondents. Many of the questions were forced - choice questions which required the respondent to indicate a preference between a "yes" response or a "no" response. The other questions required specific information, such as the number of years of service, or the hours worked. However, to overcome both these limitations there was the opportunity for respondents to expand on their opinions regarding the issues raised. A space for further comments following each question or item was provided for this purpose. The phrasing of some questions and choice of words and categories in others could on reflection, have been different and might have influenced the respondents choices in some of the questions.

Limited interpretability for the internal and external factors influencing occupational health nursing practice

The primary focus of the questionnaire was to elicit information regarding the internal factors which influence OH nursing practice. These included: professional development; the working environment; perceptions and beliefs; and issues relating to team work. These internal influencing factors were perceived subjectively by the respondents. The information relating to the external influencing factors was also derived from the respondents subjective opinions. The identification of the external influencing factors was an important step toward fully comprehending the nature and scope of OH nursing practice today. The relative importance of these as perceived by the subjects in this British study has been demonstrated and can be seen in *Figure 8.1.* However, objective, research is required to identify the relative importance of each of these factors with particular regard to national and cross-cultural differences.

8.6 Conclusions and recommendations

The motivation for this research was the need to discover or reveal the major influencing factors involved in OH nursing practice; to add to the body of OH nursing knowledge; and to demonstrate the factors identified by way of a framework. The most important internal factor identified by statistical analysis was the "working environment" and secondly the "OH nurses' perceptions and beliefs". Since it may not be possible to change all the key elements of the "working environment" immediately, it is necessary in order to change OH practice first to focus on addressing or altering the perceptions and beliefs of OH nurses. Education was the most important external factor identified which influenced change in practice. Then working environment may follow these changes.

In this study the results indicated that actual OH nursing practice still focuses on traditional treatments and clinical services, despite perceptions and beliefs being held about progressive - preventive practice. Since the overall findings were that practice was dictated by the nature of the "working environment" and the "OH nurses' perceptions and beliefs". Several changes are required in order to improve OH nursing practice. First there is a need for changes in legislation and policy, i.e. specific "working environment" factors. This could have the effect of making OH nurses compulsory in workplaces and ensuring that all companies create and develop an OH nursing policy. Secondly, it is necessary to alter the way in which OH nurses' are perceived by others, to ensure that their image and status is improved and that there is increased recognition of their potential value and importance. This would affect OH nurses' own changing "perceptions and beliefs". There are two elements involved within this: firstly, the OH nurses' expectations of their roles and functions and secondly, employers' and employees' expectations of the OH service. To bring about changes within this sphere, changes in the education of OH nurses would facilitate their greater understanding and knowledge of OH and safety, management and communication skills. This would enable OH nurses to sell their services more effectively, to become more competitive in the job market and to justify their roles and functions. Therefore, in any attempt to change OH nursing practice, it is necessary to first change the education of OH nurses (an external factor) and thereby influence the perceptions and beliefs of OH nurses (an internal factor); and at the same time reinforce the need for changes in legislation. If changes in the education of OH nurses are made without comparable changes to legislation it may be expected that some individuals will become more frustrated and demoralised if they possess additional skills that they feel unable to use because changes in policy do not recognise and support increased responsibilities and a higher profile.

Regarding recommendations for OH nursing, an important issue is the need to formulate specific standards for OH nursing practice, and to ensure that high quality services are established and maintained. Furthermore it is recommended that OH nurses receive greater exposure to theoretical models and general and professional philosophy in their training, so that they can develop services both independently and as a member of an OH and safety team for a specific working environment.

Recommendations concerning OH nursing education include the preparation of more highly qualified OH nursing tutors, and provision of more educational programmes offering higher qualifications for nurses practising OH and more updating courses. Another recommendation is to promote the acquisition of more knowledge related to OH safety, health education and promotion, communication and management (including the management of change) within the

business environment. This will involve changes in curriculum and course structure and substantial personal and professional changes for occupational nursing teachers, in particular, as well as their students. Finally nurses need to be encouraged to think independently and creatively so that they can function more effectively within the OH system, in the context of a specific enterprise.

Regarding recommendations ,about OH nursing policy, an important issue is to influence legislation by making a specific specialist OH nursing qualification compulsory. It is envisaged that, in extending the role of the OH nurse and in facilitating further education, nurses will become motivated to take on greater responsibilities and thereby to attain higher status and professional promotion within the enterprise in which they work. They might then remain in the profession which should provide increasing responsibility and job satisfaction. Further, regular assessment of OH nursing manpower needs is essential, along with review of the general direction of professional development. There is a great need for an annual registration system for nurses holding specialist qualifications so that they can be identified, located and provided with relevant information regularly. It is important to motivate nurses to become more politically active and recognise the importance of their individual contributions and their ability to influence legislation, which in turn influences practice. The establishment of pressure groups to promote the proposed changes and strong support groups are paramount if changes in legislation are to occur. Finally, it is proposed that OH nurses use the media to influence both the public's perception and employers' and employees' views about their roles, functions and status.

8.7 The need for further research

The main recommendations concerning future OH nursing research include the need for more analytical studies of OH nurse's perceptions and beliefs, particularly in relation to the internal influence factors. Further research into the working environment is also warranted, given the relative importance of this area to practice. It would be important to focus research onto the health hazards within the environment rather than focus on different types of organisation. Because of the potential large variance expected, it is especially important to consider power analysis regarding sample size for these types of studies.

Research into educational issues would also be beneficial to the future of OH nursing, particularly regarding the needs (objectively measured) of OH nurses rather than their perceived demands (subjectively measured). The need for this type of research is evident from the results of this study, where the key persons identified different important educational components than did the

OH nurses. This difference probably reflects the fact that the key persons have greater experience and training than the OH nurses and can view education in a retrospective way, more objectively than OH nurses who may be unaware of many of the possible components of education that might influence their practice. How best to change the education of OH nurses therefore requires further detailed and specific study.

More research should be directed towards examination of the effect of the influence of relationships between team members, specifically with a view to enhancing the provision of a comprehensive service provided by an interdisciplinary team. The external factors outlined in this study required further systematic analysis. For example the current findings reflected a particular type of OH nursing education, health care delivery system, health and safety legislation and economic and financial situation. In order to make generalisations from the data international and cross-cultural comparisons are needed. This necessity is highlighted by the forthcoming European Union legislation which should standardise OH services.

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Appendices

Appendix A1. Additional Chi-square Tables for Chapter 6

Table A1.1 Comparison of OH nurses' actual roles with respect to gender.

Actual roles	Male		Female		X^2 [a]	P-value
	No.	%	No.	%		
Therapeutic	4	25 0	105	46 7	2 02	0.155
Emergency responsibility	9	56.3	162	72 0	1.11	0.291
Health surveillance	10	62.5	178	79.1	1.53	0 216
Health screening	12	75.0	199	88 4	1.40	0.237
Environment surveillance	10	62.5	86	38 2	2.73	0 098
Consultant	6	37.5	70	31 1	0.06	0.800
Education	8	50 0	151	67.1	1.26	0 261
Training	5	31.1	93	41 3	0.28	0 596
Management	4	25.0	47	20 9	<0.01	0.942
Research	1	6.3	9	4.0	<0.01	1.000
Total number	16	100 0	225	100 0	-	-

[a] Chi-square test, df 1, * P < 0.05.

Table A1.2 Comparison of OH nurses' actual functions with respect to gender.

Actual functions	Male		Female		X^2 [a]	P-value
	No.	%	No.	%		
Routine treatment	8	50.0	134	59.0	0 20	0.656
Rehabilitation & resettlement	6	37.5	95	41.9	<0.01	0 937
Emergency treatment	12	75 0	169	74.4	<0.01	1.000
Health supervision of worker	10	62.5	138	60.8	<0 01	1 000
Assessment of exposure	3	18.8	27	11.9	0.17	0.680
General health surveillance	8	50.0	105	46.3	<0 01	0 975
Specific health surveillance	5	31.3	116	51.1	1 63	0.202
Record keeping	11	68.8	162	71.4	<0 01	1.000
Health screening	10	62 5	164	72.2	0 30	0.583
Immunisation	10	62 5	76	33 5	4 31	0.038*
Familiarisation with work environment	8	50 0	122	53.7	<0 01	0 975
Informing workers of health hazards	4	25 0	79	34 8	0 28	0.599
Occupational safety	6	37 5	40	17.6	2 66	0.103
Individual counselling	11	68 8	166	73 1	<0 01	0 928
Assisting socio-psychological problems	3	18 8	37	16 3	<0 01	1.000
Health education & promotion	10	62 5	161	70 9	0 18	0.667
First-aid training for workers	7	43 8	114	50 2	0 06	0 809
Development & maintenance of records	4	25 0	142	62 6	7 29	0.007*
Meetings & communication	9	56 3	117	51 5	0 01	0.916
Co-operation with outside agencies	6	37 5	62	27 3	0 35	0 556
Total number	16	100 0	227	100 0	-	-

[a] Chi-square test, df 1, * P 0 05

Table A1.3 Comparison of OH nurses' actual roles with respect to two age groups

Actual roles	< 45 years		≥ 45 years		X^2 [a]	P-value
	No.	%	No.	%		
Therapeutic	49	43 4	59	46 5	0.12	0 726
Emergency responsibility	76	67 3	94	74 0	1 02	0 314
Health surveillance	83	73 5	104	81 9	2 01	0 156
Hea th screening	97	85 8	113	89 0	0 29	0 591
Environment surveillance	47	41.6	49	38 6	0 12	0.732
Consultant	36	31.9	40	31.5	<0 01	1.000
Education	82	72 6	76	59.8	3 76	0 053
Training	49	43.4	49	38 6	0 38	0.535
Management	25	22.1	26	20.5	0.02	0.878
Research	6	5.3	4	3 1	0 26	0.608
Total number	113	100.0	127	100.0	-	-

[a] Chi-square test, df 1, * P < 0.05.

Table A1.4 Comparison of OH nurses' actual functions with respect to two age groups.

Actual functions	< 45 years		≥ 45 years		X^2 [a]	P-value
	No	%	No.	%		
Routine treatment	63	54.3	78	61.9	1.14	0.286
Rehabilitation & resettlement	47	40.5	53	42.1	0.01	0.910
Emergency treatment	85	73.3	95	75.4	0.05	0.818
Health supervision of worker	67	57.8	81	64.3	0.83	0.364
Assessment of exposure	12	10.3	18	14.3	0.54	0.463
General health surveillance	54	46 6	59	46.8	<0 01	1.000
Specific health surveillance	53	45.7	67	53.2	1.07	0.301
Record keeping	79	68.1	93	73.8	0.70	0 403
Health screening	84	72.4	89	70.6	0.03	0 870
Immunisation	35	30.2	51	40.5	2.37	0.124
Familiarisation with work environment	59	50.9	71	56 3	0.53	0.468
Informing workers of health hazards	40	34.5	42	33 3	<0 01	0.958
Occupational safety	28	24.1	18	14.3	3.19	0.074
Individual counselling	88	75 9	88	69.8	0 82	0.365
Assisting socio-psychological problems	22	19 0	18	14 3	0 65	0 420
Health education & promotion	83	71.6	88	69.8	0 03	0 880
First-aid training for workers	71	61 2	49	38 9	11.16	<0 001*
Development & maintenance of records	69	59 5	77	61 1	0.16	0 899
Meetings & communication	67	57 8	58	46 0	2 87	0 090
Co-operation with outside agencies	31	26 7	37	29 4	0 10	0 754
Total number	116	100 0	126	100 0	-	-

[a] Chi-square test, df=1, * P < 0 05.

Table A1.5 Comparison of OH nurses' actual roles with respect to two marital status groups.

Actual roles	Married		Non-married		X^2 [a]	P-value
	No.	%	No	%		
Therapeutic	74	44 8	34	45.9	<0 01	0 986
Emergency responsibility	117	70.9	52	70.3	<0 01	1.000
Health surveillance	131	79 4	56	75 7	0 23	0.635
Health screening	146	88 5	63	85 1	0 26	0.609
Environment surveillance	68	41 2	27	36 5	0 30	0.584
Consultant	46	27 9	30	40 5	3 22	0.073
Education	110	66.7	47	63.5	0 11	0.743
Training	69	41 8	29	39.2	0.06	0.810
Management	33	20 0	17	23.0	0.12	0.726
Research	9	5.5	1	1.4	1 24	0 265
Total number	165	100.0	74	100.0	-	-

[a] Chi-square test, df=1, * P < 0 05.

Table A1.6 Comparison of OH nurses' actual functions with respect to two marital status groups.

Actual functions	Married		Non-married		X^2 [a]	P-value
	No.	%	No.	%		
Routine treatment	96	57.8	45	60.0	0.03	0.861
Rehabilitation & resettlement	65	39.2	35	46.7	0.91	0.340
Emergency treatment	126	75.9	54	72.0	0.24	0.627
Health supervision of worker	102	61.4	46	61.3	<0 01	1.000
Assessment of exposure	20	12.0	10	13.3	<0.01	0.945
General health surveillance	84	50.6	29	38.7	2.50	0.114
Specific health surveillance	85	51.2	34	45.3	0.50	0.481
Record keeping	123	74.1	49	65.3	1.54	0.215
Health screening	118	71.1	54	72.0	<0.01	1.000
Immunisation	59	35.5	27	36.0	<0.01	1.000
Familiarisation with work environment	84	50.6	45	60.0	1.48	0.224
Informing workers of health hazards	52	31.3	29	38 7	0.94	0.332
Occupational safety	31	18.7	15	20.0	<0.01	0.948
Individual counselling	116	69.9	59	78 7	1.59	0.208
Assisting socio-psychological problems	31	18.7	9	12 0	1.22	0.270
Health education & promotion	124	74 7	46	61.3	3.82	0 051
First-aid training for workers	76	45.8	43	57.3	2 31	0.128
Development & maintenance of records	94	56.6	51	68 0	2 33	0.127
Meetings & communication	86	51.8	38	50.7	<0 01	0 980
Co-operation with outside agencies	46	27.7	22	29.3	0 01	0 917
Total number	166	100.0	75	100 0	-	-

[a] Chi-square test, df=1, * P 0 05.

Table A1.7 Comparison of OH nurses' actual roles with respect to three position groups.

Actual roles	Low position		Middle position		High position		X^2 [a]	P-value
	No	%	No.	%	No.	%		
Therapeutic	28	59 6	56	47.9	25	33 3	8 60	0 014*
Emergency responsibility	36	76 6	85	72 6	49	65 3	2 03	0 362
Health surveillance	35	74 5	91	77 8	61	81 3	0 83	0.660
Health screening	42	89.4	105	89 7	62	82 7	2 18	0 337
Environmental surveillance	15	31 9	44	37 6	35	46 7	2 92	0.232
Consultant	15	31.9	34	29.1	26	34.7	0 67	0.714
Education	32	68 1	82	70 1	43	57.3	3 40	0.183
Training	23	48 9	43	36 8	31	41.3	2 08	0 354
Management	4	8 5	23	19.7	24	32 0	10 43	0 005*
Research	3	6.4	4	3.4	3	4.0	0.68	0.712
Total number	47	100 0	117	100.0	75	100 0	-	-

[a] Chi-square test, df=2, * P < 0 05.

Table A1.8 Comparison of OH nurses' actual functions with respect to three position groups.

Actual functions	Low position		Middle position		High position		X^2 [a]	P-value
	No.	%	No.	%	No.	%		
Routine treatment	29	60.4	71	60.2	41	54.7	0.66	0.719
Rehabilitation & resettlement	13	27.1	53	44.9	35	46.7	5.69	0.058
Emergency treatment	37	77.1	86	72.9	57	76.0	0.42	0.811
Health supervision of worker	28	58.3	68	57.6	51	68.0	2.29	0.319
Assessment of exposure	4	8.3	13	11.0	13	17.3	2.55	0.280
General health surveillance	25	52.1	58	49.2	29	38.7	2 80	0.246
Specific health surveillance	17	35.4	66	55.9	37	49.3	5.82	0.055
Record keeping	35	72.9	83	70.3	53	70.7	0.12	0 944
Health screening	36	75 0	83	70 3	53	70.7	0.40	0 820
Immunisation	19	39.6	42	35.6	25	33.3	0.50	0.780
Familiarisation with work environment	25	52.1	65	55.1	39	52.0	0 23	0 893
Informing workers of health hazards	14	29.2	41	34.7	27	36.0	0 67	0.714
Occupational safety	9	18 8	17	14.4	18	24 0	2.79	0.247
Individual counselling	40	83.3	86	72.9	49	65.3	4 98	0 083
Assisting socio-psychological problems	12	25.0	16	13 6	12	16.0	3.03	0.219
Health education & promotion	33	68 8	88	74 6	48	64 0	2 49	0 288
First-aid training for workers	24	50 0	63	53 4	33	44 0	1 62	0 445
Development & maintenance of records	34	70 8	71	60 2	40	53.3	3 81	0 149
Meetings & communication	23	47.9	55	46 6	47	62 7	5 16	0 076
Co-operation with outside agencies	16	33 3	31	26 3	21	28 0	0 83	0 662
Total number	48	100 0	118	100 0	75	100 0	-	-

[a] Chi-square test, df 2, * P < 0 05.

Table A1.9 Comparison of OH nurses' actual roles with respect to two duty pattern groups

Actual roles	Day duty		Shift work		X^2 [a]	P-value
	No.	%	No.	%		
Therapeutic	91	44 4	18	50 0	0 20	0 658
Emergency responsibility	138	67 3	33	91 7	7.67	0 006*
Health surveillance	159	77.6	29	80 6	0 03	0.856
Health screening	178	86 8	33	91 7	0 29	0 591
Environment surveillance	83	40 5	13	36 1	0.10	0 756
Consultant	63	30.7	13	36 1	0 20	0 655
Education	142	69.3	17	47.2	5 68	0.017*
Training	86	42.0	12	33 3	0 62	0.431
Management	46	22 4	5	13 9	0.88	0.349
Research	8	3 9	2	5 6	<0.01	0.996
Total number	205	100.0	36	100 0	-	-

[a] Chi-square test, df 1, * $P < 0.05$.

Table A1.10 Comparison of OH nurses' actual functions with respect to two duty pattern groups.

Actual functions	Day duty		Shift work		X^2 [a]	P-value
	No.	%	No.	%		
Routine treatment	117	57.1	25	65.8	0.68	0 411
Rehabilitation & resettlement	88	42.9	13	34.2	0.68	0.411
Emergency treatment	148	72.2	33	86.8	2.89	0.089
Health supervision of worker	123	60.0	25	65.8	0 24	0.624
Assessment of exposure	26	12.7	4	10.5	0.01	0.918
General health surveillance	92	44.9	21	55 3	1.00	0.316
Specific health surveillance	107	52.2	14	36.8	2.44	0.118
Record keeping	142	69.3	31	81.6	1.81	0.179
Health screening	145	70.7	29	76.3	0.26	0 613
Immunisation	78	38.0	8	21.1	3.34	0.068
Familiarisation with work environment	110	53.7	20	52.6	<0 01	1.000
Informing workers of health hazards	68	33.2	15	39.5	0 32	0.571
Occupational safety	38	18.5	8	21.1	0.02	0.890
Individual counselling	149	72.7	28	73.7	<0 01	1.000
Assisting socio-psychological problems	33	16.1	7	18 4	0 01	0 907
Health education & promotion	146	71 2	25	65.8	0.23	0.631
First-aid training for workers	98	47.8	23	60.5	1.60	0 206
Development & maintenance of records	123	60.0	23	60.5	<0.01	1 000
Meetings & communication	116	56 6	10	26 3	10 58	0 001*
Co-operation with outside agencies	57	27 8	11	28 9	<0.01	1 000
Total number	205	100 0	38	100 0	-	-

[a] Chi-square test, df 1, * $P < 0$ 05

Table A1.11 Comparison of OH nurses' actual roles with respect to three working hours groups.

Actual roles	<35 hours		35-39 hours		≥ 40hours		X^2 [a]	P-value
	No	%	No.	%	No.	%		
Therapeutic	25	52 1	62	41 6	19	47 5	1.76	0 416
Emergency responsibility	34	70 8	109	73 2	26	65 0	1.00	0.605
Health surveillance	35	72 9	120	80 5	29	72 5	1.91	0 384
Health screening	43	89.6	129	86 6	35	87 5	0 31	0 857
Environmental surveillance	20	41.7	58	38.9	18	45.0	0.51	0 774
Consultant	17	35.4	49	32 9	10	25 0	1.25	0.536
Education	29	60.4	96	64.4	30	75.0	2.30	0.317
Training	20	41.7	61	40.9	14	35.0	0.53	0.766
Management	7	14 6	32	21.5	12	30 0	3.07	0.216
Research	1	2.1	6	4 0	3	7.5	1.55	0 461
Total number	48	100.0	149	100.0	40	100.0	-	-

[a] Chi-square test, df=2, * P < 0.05.

Table A1.12 Comparison of OH nurses' actual functions with respect to three working hours groups.

Actual functions	< 35hours		35-39 hours		≥ 40hours		X^2 [a]	P-value
	No	%	No.	%	No.	%		
Routine treatment	30	62.5	86	57.7	23	54.8	0.59	0.746
Rehabilitation & resettlement	16	33 3	66	44.3	19	45.2	2.01	0.366
Emergency treatment	39	81.3	113	75.8	27	64.3	3.50	0.174
Health supervision of worker	28	58.3	94	63.1	23	54.8	1 08	0.582
Assessment of exposure	6	12.5	16	10.7	5	11.9	0.13	0.937
General health surveillance	26	54.2	72	48.3	13	31.0	5.54	0.063
Specific health surveillance	19	39.6	78	52.3	23	54.8	2.81	0.246
Record keeping	42	87.5	99	66.4	31	73.8	8.97	0.011*
Health screening	35	72.9	105	70.5	31	73.8	0 24	0 889
Immunisation	14	29.2	57	38.3	14	33.3	1.44	0.486
Familiarisation with work environment	20	41.7	82	55.0	24	57.1	3.00	0.223
Informing workers of health hazards	18	37.5	46	30.9	18	42.9	2.33	0.313
Occupational safety	10	20 8	24	16.1	11	26 2	2.24	0.326
Individual counselling	36	75.0	108	72 5	29	69.0	0 40	0.820
Assisting socio-psychological problems	8	16.7	22	14.8	10	23 8	1.80	0.407
Health education & promotion	35	72 9	109	73.2	27	64.3	1.28	0 528
First-aid training for workers	24	50 0	72	48 3	21	50 0	0 06	0.969
Development & maintenance of records	25	52.1	93	62 4	24	57.1	1.70	0.426
Meetings & communication	27	56 3	79	53 0	18	42 9	1 82	0.403
Co-operation with outside agencies	10	20 8	42	28 2	15	35.7	2 48	0 289
Total number	48	100 0	149	100 0	42	100 0	-	-

[a] Chi-square test, df 2, * P < 0 05.

Table A1.13 Comparison of OH nurses' actual roles with respect to four salary groups.

Actual roles	< £13,000		£13,000 - 15,999		£16,000 - 19,999		≥ £20000		X^2 [a]	P-value
	No.	%	No.	%	No.	%	No.	%		
Therapeutic	35	51 5	26	40 0	34	50 7	13	33.3	4 89	0 180
Emergency responsibility	56	82 4	47	72 3	48	71.6	19	48.7	13 25	0 004*
Health surveillance	51	75 0	53	81 5	55	82.1	27	69 2	3.13	0 372
Health screening	61	89.7	55	84 6	60	89 6	33	84 6	1.33	0 721
Environmental surveillance	22	32.4	23	35 4	31	46 3	20	51 3	5.39	0 146
Consultant	17	25.0	23	35.4	21	31.3	15	38.5	2 67	0.445
Education	44	64 7	45	69 2	44	65.7	24	61.5	0 69	0.876
Training	30	44 1	28	43.1	22	32.8	17	43.6	2 37	0 499
Management	9	13 2	10	15.4	12	17.9	19	48 7	19.18	<0.001*
Research	2	2.9	2	3.1	1	1.5	5	12.8	6 88	0.076
Total number	68	100.0	65	100.0	67	100.0	39	100.0	-	-

[a] Chi-square test, df 3, * P < 0.05.

Table A1.14 Comparison of OH nurses' actual functions with respect to four salary groups.

Actual functions	< £13,000		£13,000 - 15,999		£16,000 - 19,999		≥ £20000		X^2 [a]	P-value
	No.	%	No.	%	No.	%	No.	%		
Routine treatment	44	65.7	45	68.2	30	43.5	21	53.8	10.69	0.014*
Rehabilitation & resettlement	15	22 4	27	40.9	38	55.1	20	51.3	17.55	<0 001*
Emergency treatment	55	82 1	52	78 8	50	72.5	23	59.0	7.47	0.058
Health supervision of worker	39	58.2	46	69.7	36	52.2	27	69.2	5.73	0.126
Assessment of exposure	7	10.4	9	13.6	8	11.6	6	15.4	0 68	0.878
General health surveillance	36	53.7	31	47.0	31	44 9	15	38.5	2.49	0.477
Specific health surveillance	31	46.3	36	54 5	31	44.9	21	53.8	1.82	0.610
Record keeping	58	86 6	47	71.2	43	62.3	24	61.5	13 14	0.004*
Health screening	47	70.1	46	69.7	53	76.8	26	66.7	1 59	0 662
Immunisation	22	32.8	24	36.4	21	30.4	18	46 2	2.88	0 410
Familiarisation with work environment	29	43.3	37	56.1	44	63.8	19	48 7	6.31	0.097
Informing workers of health hazards	25	67.3	24	36.4	15	21.7	17	43 6	6.99	0.072
Occupational safety	18	26.9	9	13.6	8	11.6	11	28 2	8 50	0 037*
Individual counselling	48	71.6	46	69.7	55	79.7	26	66 7	2.83	0.418
Assisting socio-psychological problems	16	23 9	6	9 1	10	14.5	8	20 5	6.08	0.108
Health education & promotion	41	61 2	48	72.7	50	72.5	31	79 5	4 56	0 207
First-aid training for workers	29	43 3	34	51 5	38	55.1	19	48 7	2 01	0 571
Development & maintenance of records	38	56.7	40	60 6	49	71 0	18	46 2	6 98	0 073
Meetings & communication	34	50 7	31	47.0	36	52 2	24	61 5	2 15	0.542
Co-operation with outside agencies	22	32 8	12	18.2	20	29.0	13	33 3	4.76	0 191
Total number	67	100 0	66	100 0	69	100 0	39	100 0	-	-

[a] Ch -square test, df=3, * P < 0 05

Table A1.15 Comparison of OH nurses' actual roles with respect to two statutory qualification groups

Actual roles	EN		RGN		$X^{2\,a}$	P-value
	No.	%	No.	%		
Therapeutic	7	36 8	102	45 9	0 28	0 600
Emergency responsibility	16	84.2	155	69 8	1 13	0 288
Health surveillance	12	63.2	176	79 3	1 80	0.180
Health screening	17	89.5	194	87 4	<0 01	1 000
Environment surveillance	8	42.1	88	39.6	<0 01	1 000
Consultant	5	26 3	71	32 0	0 06	0.800
Education	14	73.7	145	65.3	0 24	0 626
Training	5	26 3	93	41.9	1 17	0 279
Management	2	10.5	49	22.1	0 79	0.373
Research	0	0.0	10	4.5	0.12	0.730
Total number	19	100 0	222	100 0	-	-

[a] Chi-square test, df 1, * P < 0.05.

Table A1.16 Comparison of OH nurses' actual functions with respect to two statutory qualification groups.

Actual functions	EN		RGN		$X^{2\,a}$	P-value
	No.	%	No.	%		
Routine treatment	15	83.3	127	56.4	3.92	0.048*
Rehabilitation & resettlement	3	16 7	98	43.6	3.92	0 048*
Emergency treatment	16	88 9	165	73.3	1.38	0.240
Health supervision of worker	8	44.4	140	62.2	1.53	0.216
Assessment of exposure	1	5.6	29	12.9	0.29	0 591
General health surveillance	10	55.6	103	45.8	0.31	0.579
Specific health surveillance	8	44.4	113	50.2	0 05	0.821
Record keeping	14	77.8	159	70.7	0 14	0.711
Health screening	13	72 2	161	71.6	<0.01	1.000
Immunisation	5	27.8	81	36.0	0.20	0.656
Familiarisation with work environment	6	33.3	124	55.1	2.36	0 124
Informing workers of health hazards	7	38.9	76	33.8	0 03	0.856
Occupational safety	7	38 9	39	17.3	3.74	0.053
Individual counselling	14	77.8	163	72.4	0 05	0 830
Assisting socio-psychological problems	4	22 2	36	16.0	0.13	0.723
Health education & promotion	10	55 6	161	71.6	1.35	0.245
First-aid training for workers	10	55.6	111	49.3	0 07	0 792
Development & maintenance of records	12	66 7	134	59.6	0.12	0 732
Meetings & communication	7	38 9	119	52 9	0 81	0.369
Co-operation with outside agencies	5	27.8	63	28 0	<0 01	1 000
Total number	18	100.0	225	100.0	-	-

[a] Chi-square test, df 1, * P < 0 05.

Table A1.17 Comparison of OH nurses' actual roles with respect to four professional qualification groups

Actual roles	None		OHNP		OHNC		OHND		X^2 [a]	P-value
	No.	%	No	%	No.	%	No.	%		
Therapeutic	34	56 7	11	39 3	61	43.0	3	27 3	5 35	0.148
Emergency responsibility	45	75 0	24	85.7	98	69 0	4	36 4	9.77	0 021*
Health surveillance	44	73 3	21	75 0	114	80 3	9	81 8	1 41	0.703
Health screening	50	83 3	25	89.3	128	90 1	8	72 7	3 65	0 302
Environmental surveillance	19	31.7	8	28 6	62	43 7	7	63 6	6 66	0.084
Consultant	19	31.7	6	21.4	45	31.7	6	54.5	3 90	0 272
Education	39	65.0	17	60 7	97	68 3	6	54.5	1.33	0.723
Training	24	40.0	13	46 4	57	40 1	4	36.4	0 49	0 920
Management	8	13.3	2	7 1	34	23 9	7	63.6	16.48	<0 001*
Research	1	1.7	0	0 0	8	5 6	1	9.1	4 79	0 188
Total number	60	100.0	28	100 0	142	100.0	11	100 0	-	-

[a] Chi-square test, df 3, * P < 0 05.

Table A1.18 Comparison of OH nurses' actual functions with respect to four professional qualification groups.

Actual functions	None		OHNP		OHNC		OHND		X^2 [a]	P-value
	No.	%	No.	%	No.	%	No.	%		
Routine treatment	39	66.1	22	78.6	77	53.1	4	36.4	10.39	0.016*
Rehabilitation & resettlement	14	23.7	4	14.3	77	53.1	6	54.5	26.68	<0.001*
Emergency treatment	50	84 7	24	85.7	101	69.7	6	54 5	9.50	0.023*
Health supervision of worker	37	62.7	21	75.0	81	55.9	9	81.8	6.34	0 096
Assessment of exposure	9	15.3	3	10.7	17	11.7	1	9.1	0.67	0.879
General health surveillance	28	47 5	18	64.3	62	42.8	5	45.5	4 42	0.219
Specific health surveillance	30	50.8	11	39.3	77	53.1	3	27 3	4.23	0.238
Record keeping	45	76.3	19	67.9	103	71.0	6	54 5	2 29	0.515
Health screening	43	72.9	20	71.4	104	71.7	7	63 6	0.38	0.945
Immunisation	20	33.9	11	39.3	53	36.6	2	18 2	1 91	0.591
Familiarisation with work environment	27	45.8	15	53.6	82	56.6	6	54.5	1.96	0.580
Informing workers of health hazards	23	39 0	9	32.1	44	30.3	7	63.6	5 57	0.135
Occupational safety	16	27.1	4	14 3	23	15.9	3	27.3	4 15	0.246
Individual counselling	38	64.4	21	75 0	110	75.9	8	72.7	2.76	0.430
Assisting socio-psychological problems	10	16 9	6	21.4	21	14.5	3	27.3	1.72	0.633
Health education & promotion	35	59.3	20	71.4	106	73 1	10	90.9	6 56	0 087
First-aid training for workers	19	32 2	15	53 6	82	56 6	5	45 5	10 37	0 016*
Development & maintenance of records	33	55 9	19	67.9	89	61.4	5	45 5	2 20	0.531
Meetings & communication	25	42 4	10	35 7	83	57 2	8	72 7	8.77	0 032*
Co-operation with outside agencies	14	23.7	6	21 4	42	29 0	6	54 5	4 65	0 198
Total number	59	100 0	28	100 0	145	100 0	11	100 0	-	-

[a] Chi-square test, df=3, * P < 0 05.

Table A1.19 Comparison of the actual roles of OH nurses between short professional nursing course groups.

Actual roles	Yes		No		X^2 [a]	P-value
	No.	%	No	%		
Therapeutic	50	43 9	54	47 4	0 16	0.670
Emergency responsibility	82	71 9	79	69 3	0 85	0 771
Health surveillance	89	78 1	86	75.4	0 98	0 754
Health screening	102	89 5	96	84 2	0 96	0 327
Environment surveillance	53	46 5	38	33.3	3 58	0 058
Consultant	38	33 3	37	32.5	<0 01	1.000
Education	68	59.6	83	72 8	3 84	0 049*
Training	44	38 6	48	42.1	0 16	0 686
Management	25	21 9	24	21.1	<0 01	1.000
Research	5	4.4	4	3 5	<0 01	1.000
Total number	114	100.0	114	100.0	-	-

[a] Chi-square test, df 1, * P < 0 05.

Table A1.20 Comparison of the actual functions of OH nurses between short professional nursing course groups.

Actual functions	Yes		No		X^2 [a]	P-value
	No.	%	No.	%		
Routine treatment	68	58.6	67	58.8	<0 01	1.000
Rehabilitation & resettlement	56	48 3	40	35.1	3 59	0 058
Emergency treatment	88	75.9	83	72.8	0 14	0.704
Health supervision of worker	65	56.0	71	62.3	0.69	0.407
Assessment of exposure	12	10.3	15	13.2	0.21	0 647
General health surveillance	54	46.6	53	46 5	<0.01	1 000
Specific health surveillance	59	50.9	55	48.2	0.07	0 791
Record keeping	85	73 3	79	69.3	0.27	0 602
Health screening	90	77.6	73	64.0	4 48	0 034*
Immunisation	41	35.3	42	36.8	0.01	0.921
Familiarisation with work environment	57	49 1	65	57.0	1.13	0.287
Informing workers of health hazards	40	34.5	39	34 2	<0.01	1.000
Occupational safety	19	16.4	24	21.1	0.55	0.459
Individual counselling	86	74 1	81	71.1	0.14	0 706
Assisting socio-psychological problems	20	17.2	16	14.0	0.24	0 626
Health education & promotion	79	68.1	84	73.7	0.62	0.432
First-aid training for workers	56	48 3	60	52 6	0.28	0 597
Development & maintenance of records	69	59.5	71	62 3	0.09	0 764
Meetings & communication	61	52 6	59	51 8	<0.01	1 000
Co-operation with outside agencies	31	26.7	34	29.8	0.14	0 707
Total number	116	100 0	114	100.0	-	-

[a] Chi-square test, df 1, * P 0 05.

Table A1.21 Comparison of the actual roles of OH nurses between hospital experience groups

Actual roles	None		< 5 years		5 - 9 years		≥ 10 years		X^2 [a]	P-value
	No	%	No	%	No.	%	No.	%		
Therapeutic	5	71 4	52	46 0	23	41 1	17	44 7	2 39	0 495
Emergency responsibility	7	100 0	72	63 7	44	78 6	28	73.7	9 35	0 025*
Health surveillance	3	42.9	89	78 8	44	78 6	31	81 6	4 39	0 223
Health screening	6	85 7	101	89 4	46	82.1	33	86 8	1 67	0 643
Environmental surveillance	4	57.1	46	40 7	20	35.7	15	39.5	1.29	0.732
Consultant	1	14 3	34	30 1	19	33 9	12	31 6	1.32	0.724
Education	5	71.4	76	67 3	35	62.5	26	68 4	0.56	0 905
Training	2	28 6	47	41 6	27	48 2	15	39 5	1 50	0 681
Management	1	14 3	26	23 0	14	25.0	8	21.1	0 54	0.910
Research	0	0 0	7	6 2	2	3.6	0	0 0	4 90	0 179
Total number	7	100.0	113	100 0	56	100.0	38	100.0	-	-

[a] Chi-square test, df 3, * P < 0 05.

Table A1.22 Comparison of the actual functions of OH nurses between hospital experience groups.

Actual functions	None		< 5 years		5 - 9 years		≥ 10 years		X^2 [a]	P value
	No.	%	No	%	No.	%	No.	%		
Routine treatment	5	71.4	62	53.4	35	63.6	23	60.5	2.35	0 504
Rehabilitation & resettlement	5	71.4	51	44 0	22	40 0	12	31.6	4.49	0 213
Emergency treatment	6	85.7	87	75.0	41	74 5	28	73.7	0.52	0.914
Health supervision of worker	3	42.9	70	60.3	36	65.5	22	57.9	1.57	0 667
Assessment of exposure	1	14.3	12	10.3	10	18.2	4	10.5	2.13	0 545
General health surveillance	5	71 4	49	42.2	22	40.0	22	57.9	5 44	0.142
Specific health surveillance	4	57.1	57	49.1	31	56.4	21	55.3	1.03	0 794
Record keeping	4	57.1	82	70.7	38	69.1	31	81.6	2.91	0 406
Health screening	6	85.7	84	72 4	34	61.8	30	78 9	4.33	0 228
Immunisation	1	14 3	39	33 6	19	34.5	14	36 8	1.55	0 671
Familiarisation with work environment	4	57.1	68	58.6	28	50.9	14	36.8	5.62	0 131
Informing workers of health hazards	2	28 6	39	33.6	17	30.9	13	34.2	0.22	0 975
Occupational safety	1	14.3	23	19 8	9	16 4	8	21.1	0.52	0 915
Individual counselling	4	57.1	90	77 6	37	67 3	27	71.1	3.05	0 384
Assisting socio-psychological problems	1	14.3	19	16.4	10	18 2	5	13 2	0.45	0 930
Health education & promotion	6	85.7	80	69 0	37	67.3	31	81 6	3.69	0 298
First-aid training for workers	2	28 6	63	54.3	23	41 8	16	42 1	4 33	0.228
Development & maintenance of records	3	42 9	73	62.9	32	58 2	21	55 3	1.67	0 643
Meetings & communication	5	71 4	58	50 0	31	56 4	22	57 9	1 99	0 575
Co-operation with outside agencies	2	28 6	35	30.2	15	27 3	8	21.1	1 24	0 743
Total number	7	100 0	116	100 0	55	100 0	38	100 0	-	-

[a] Chi-square test, df 3, * P < 0 5

Table A1.23 Comparison of the actual roles of OH nurses between community health nursing experience groups.

Actual roles	Yes		No		X^2 [a]	P-value
	No	%	No	%		
Therapeutic	34	39 5	75	49 0	1.63	0 201
Emergency responsibility	57	66 3	113	73 9	1 19	0 275
Health surveillance	67	77 9	119	77.8	<0 01	1 000
Health screening	75	87 2	134	87 6	<0 01	1.000
Environment surveillance	39	45.3	56	36.6	1.41	0.235
Consultant	28	32.6	47	30 7	0 22	0.882
Education	58	67 4	100	65.4	0 03	0.854
Training	33	38 4	65	42.5	0 23	0 629
Management	21	24.4	28	18.3	0.92	0.338
Research	6	7.0	4	2 6	1.64	0.201
Total number	86	100.0	153	100 0	-	-

[a] Chi-square test, df 1, * P < 0.05.

Table A1.24 Comparison of the actual functions of OH nurses between community health nursing experience groups.

Actual functions	Yes		No		X^2 [a]	P-value
	No.	%	No.	%		
Routine treatment	47	54.7	94	60 6	0.59	0.442
Rehabilitation & resettlement	37	43.0	63	40.6	0.05	0.824
Emergency treatment	62	72.1	118	76.1	0 29	0.592
Health supervision of worker	56	65.1	90	58 1	0.88	0.349
Assessment of exposure	11	12.8	19	12.3	<0.01	1.000
General health surveillance	35	40.7	76	49.0	1.23	0.268
Specific health surveillance	47	54.7	73	47.1	0.98	0 323
Record keeping	60	69.8	111	71.6	0.24	0 877
Health screening	62	72.1	110	71.0	<0.01	0 971
Immunisation	30	34.9	56	36.1	<0 01	1.000
Familiarisation with work environment	49	57.0	79	51 0	0.58	0.447
Informing workers of health hazards	27	31.4	55	35.5	0.25	0 617
Occupational safety	18	20.9	28	18.1	0.14	0.710
Individual counselling	68	79.1	108	69.7	2.02	0.155
Assisting socio-psychological problems	15	17.4	24	15.5	0.05	0 831
Health education & promotion	66	76.7	104	67.1	2 03	0.154
First-aid training for workers	38	44 2	83	53 5	1.58	0 208
Development & maintenance of records	51	59.3	95	61.3	0 27	0 869
Meetings & communication	44	51.2	82	52.9	0 01	0 901
Co-operation with outside agencies	22	25 6	45	29 0	0 18	0 672
Total number	86	100 0	155	100 0	-	-

[a] Chi-square test, df 1, * P < 0 05

Table A1.25 Comparison of the actual roles of OH nurses between OH nursing experience groups.

Actual roles	≥ 10 years		< 10 years		X^2 [a]	P-value
	No.	%	No.	%		
Therapeutic	50	43.9	56	46.3	0.06	0.809
Emergency responsibility	82	71.9	85	70 2	0 02	0 888
Health surveillance	85	74 6	97	80 2	0.76	0.384
Health screening	103	90.4	102	84.3	1 43	0 232
Environment surveillance	49	43.0	47	38.8	0.26	0.608
Consultant	36	31.6	39	32 2	<0.01	1.000
Education	68	59.6	86	71.1	2.91	0 088
Training	39	34.2	55	45.5	2.64	0.104
Management	32	28.1	18	14.9	5.34	0 021*
Research	7	6.1	3	2.5	1.14	0.286
Total number	114	100.0	121	100.0	-	-

[a] Chi-square test, df 1, * P < 0 05.

Table A1.26 Comparison of the actual functions of OH nurses between OH nursing experience groups.

Actual functions	≥ 10 years		< 10 years		X^2 [a]	P-value
	No.	%	No.	%		
Routine treatment	65	57.5	73	58.9	<0.01	0.937
Rehabilitation & resettlement	50	44 2	50	40.3	0.23	0.632
Emergency treatment	83	73.5	94	75.8	0.07	0.790
Health supervision of worker	69	61.1	74	59.7	<0.01	0.933
Assessment of exposure	15	13.3	12	9.7	0.44	0.506
General health surveillance	55	48.7	55	44.4	0.29	0.592
Specific health surveillance	50	44.2	69	55.6	2.63	0.105
Record keeping	79	69.9	91	73.4	0.20	0.653
Health screening	86	76.1	83	66.9	2.00	0.157
Immunisation	49	43.4	35	28 2	5.28	0 022*
Familiarisation with work environment	60	53.1	65	52.4	<0.01	1.000
Informing health hazards	39	34.5	42	33.9	<0.01	1.000
Occupational safety	19	16 8	26	21.0	0.42	0.517
Individual counselling	83	73.5	90	72.6	<0.01	0.997
Assisting socio-psychological problems	17	15 0	22	17.7	0.15	0.701
Health education & promotion	81	71.7	89	71.8	<0 01	1.000
First-aid training for workers	50	44.2	66	53.2	1.56	0.211
Development & maintenance of records	69	61.1	72	58.1	0.11	0.736
Meetings & communication	52	46 0	71	57 3	2 56	0.110
Co-operation with outside agencies	34	30 1	33	26 6	0 20	0.653
Total number	113	100 0	124	100 0	-	-

[a] Chi-square test, df 1, * P < 0 05.

Table A1.27 Comparison of the actual roles of OH nurses between definition of OH nursing groups.

Actual roles	AAOHN		ANA		RCN		Others		X^2 [a]	P-value
	No	%	No	%	No.	%	No	%		
Therapeutic	62	44 0	7	35.0	33	51 6	7	46.7	1 99	0 574
Emergency responsibility	106	75 2	7	35 0	47	73.4	10	66 7	12 63	0 006*
Health surveillance	109	77 3	16	80 0	50	78 1	12	85 7	0.12	0 989
Health screening	121	85 8	17	85 0	58	90.6	14	93 3	1.63	0 653
Environmental surveillance	58	41.1	7	35 0	20	31.3	11	73 3	9.24	0 026*
Consultant	44	31 2	10	50 0	17	26 6	5	33 3	3.72	0 294
Education	100	70 9	15	75.0	35	54.7	9	60.0	6.05	0.109
Training	51	36.2	11	55 0	31	48 4	5	33 3	4 78	0 189
Management	31	22.0	8	40.0	11	17.2	1	6.7	6.74	0 081
Research	6	4 3	2	10 0	1	1.6	1	6 7	2.86	0 414
Total number	141	100.0	20	100 0	64	100 0	15	100 0	-	-

[a] Chi-square test, df 3, * P < 0.05.

Table A1.28 Comparison of the actual functions of OH nurses between definition of OH nursing groups.

Actual functions	AAOHN		ANA		RCN		Others		X^2 [a]	P-value
	No	%	No	%	No.	%	No	%		
Routine treatment	84	59.6	8	38.1	39	60.9	10	62 5	3.86	0.277
Rehabilitation & resettlement	61	43.3	11	52.4	24	37.5	5	31.3	2.32	0.508
Emergency treatment	107	75.9	9	42.9	54	84 4	10	62.5	14.32	0.003*
Health supervision of worker	88	62.4	11	52.4	41	64.1	7	43.8	2.95	0.400
Assessment of exposure	19	13.5	3	14.3	8	12.5	11	68.8	4.45	0.217
General health surveillance	68	48 2	8	38.1	27	42.2	9	56.3	1.86	0.602
Specific health surveillance	74	52.5	12	57.1	26	40 6	9	56 3	3.29	0.349
Record keeping	106	75.2	12	57.1	41	64.1	11	68.8	5.38	0.146
Health screening	99	70.2	16	76.2	46	71.9	12	75.0	0.45	0.929
Immunisation	45	31 9	8	38.1	26	40.6	6	37 5	1.60	0.660
Familiarisation with work environment	72	51.1	14	66 7	34	53.1	9	56.3	1.88	0.597
Informing workers of health hazards	52	36.9	7	33.3	22	34.4	2	12.5	4.41	0.221
Occupational safety	27	19.1	4	19.0	12	18 8	3	18 8	0.01	0 999
Individual counselling	103	73.0	17	81.0	45	70.3	12	75.0	0.99	0 805
Assisting socio-psychological problems	19	13.5	8	38.1	10	15.6	3	18.8	6.69	0.083
Health education & promotion	103	73.0	14	66 7	40	62.5	14	87 5	5 09	0.166
First-aid training for workers	68	48 2	14	66.7	33	51.6	6	37 5	3 63	0 304
Development & maintenance of records	80	56 7	12	57 1	43	67.2	11	68 8	2 62	0 454
Meetings & communication	70	49 6	13	61 9	35	54 7	8	50.0	1.36	0 715
Co-operation with outside agencies	33	23 4	8	38.1	18	28 1	9	56 3	8 11	0 044*
Total number	141	100 0	21	100 0	64	100 0	16	100 0	-	-

[a] Chi-square test, df 3, * P 0 05.

Table A1.29 Comparison of the actual roles of OH nurses between definition of OH nurse groups

Actual roles	ICOH-NC		AAOHN		USDL		Others		X^2 [a]	P-value
	No	%	No	%	No.	%	No	%		
Therapeutic	49	46 2	28	49 1	26	50.0	3	17 6	6 62	0.085
Emergency responsibility	67	63 2	39	68 4	45	86 5	12	70 6	10 17	0 017*
Health surveillance	81	76 4	46	80 7	41	78 8	12	7 6	0 91	0 823
Health screening	95	89 6	49	86 0	45	86 5	15	88 2	0 59	0 899
Environmental surveillance	40	37 7	23	40 4	17	32.7	12	70 6	7 91	0 048*
Consultant	35	33 0	17	29 8	15	28 8	6	35 3	0 47	0 925
Education	77	72.6	38	66 7	28	53 8	11	64 7	5 44	0 142
Training	45	42 5	21	36 8	24	46 2	6	35 3	1 29	0.732
Management	26	24.5	12	21 1	4	7.7	5	29 4	8 27	0 041*
Research	3	2 8	4	7 0	0	0 0	3	17 6	10 33	0 016*
Total number	106	100.0	57	100 0	52	100 0	17	100 0	-	-

[a] Chi-square test, df 3, * $P < 0.05$.

Table A1.30 Comparison of the actual functions of OH nurses between definition of OH nurse groups.

Actual functions	ICOH-NC		AAOHN		USDL		Others		X^2 [a]	P-value
	No.	%	No.	%	No.	%	No.	%		
Routine treatment	56	51.9	33	56 9	39	76.5	8	47 1	10.17	0.017*
Rehabilitation & resettlement	50	46.3	26	44 8	13	25.5	9	52 9	7.88	0.049*
Emergency treatment	74	68.5	41	70.7	47	92.2	12	70.6	13.06	0.005*
Health supervision of worker	65	60.2	31	53 4	38	74.5	10	58 8	5.55	0.136
Assessment of exposure	8	7.4	11	19.0	8	15 7	1	5 9	6.10	0.107
General health surveillance	44	40.7	28	48.3	29	56.9	10	58.8	4.67	0.197
Specific health surveillance	54	50 0	32	55.2	20	39 2	10	58.8	3.53	0 317
Record keeping	83	76.9	40	69.0	34	66.7	11	64 7	2.69	0.442
Health screening	87	80.6	37	63 8	33	64 7	12	70.6	7 36	0.061
Immunisation	40	37.0	20	34.5	21	41.2	4	23 5	1.91	0.592
Familiarisation with work environment	56	51.9	36	62.1	24	47.1	9	52.9	2.70	0.440
Informing workers of health hazards	38	35.2	19	32.8	21	41.2	4	23.5	2.01	0.569
Occupational safety	17	15.7	15	25.9	10	19 6	4	23.5	2.58	0 461
Individual counselling	85	78 7	37	63 8	34	66.7	15	88 2	7 58	0.056
Assisting socio-psychological problems	21	19 4	9	15.5	7	13 7	2	11.8	1 29	0 732
Health education & promotion	79	73.1	39	67.2	30	58.8	15	88 2	6.78	0 079
First-aid training for workers	57	52 8	28	48 3	24	47 1	7	41.2	1 09	0 778
Development & maintenance of records	63	58 3	32	55 2	31	60 8	12	70 6	1 42	0 701
Meetings & communication	55	50 9	35	60 3	20	39.2	11	64 7	6 15	0 105
Co-operation with outside agencies	25	23 1	19	32 8	16	31 4	4	23 5	2 35	0 503
Total number	108	100 0	58	100 0	51	100 0	17	100 0	-	-

[a] Chi-square test, df 3, * $P < 0.05$.

Table A1.31 Comparison of the actual roles of OH nurses between type of organisation groups.

Actual roles	Industry		Non-industry		X^2 [a]	P-value
	No.	%	No.	%		
Therapeutic	83	46 1	26	42.6	0 11	0 746
Emergency responsibility	139	77 2	32	52 5	12 38	<0 001*
Health surveillance	148	82 2	40	65 6	6.42	0 011*
Health screening	160	88 9	51	83 6	0 73	0 392
Environment surveillance	68	37 8	28	45 9	0 94	0.333
Consultant	53	29 4	23	37.7	1.08	0.298
Education	117	65 0	42	68.9	0.15	0 695
Training	76	42 2	22	36.1	0 48	0.487
Management	26	14 4	25	41.0	17.68	<0 001*
Research	4	2 2	6	9.8	4.86	0 027*
Total number	180	100 0	61	100.0	-	-

[a] Chi-square test, df=1, * $P < 0.05$.

Table A1.32 Comparison of the actual functions of OH nurses between type of organisation groups.

Actual functions	Industry		Non-industry		X^2 [a]	P-value
	No.	%	No	%		
Routine treatment	114	62 6	28	45.9	4.60	0 032*
Rehabilitation & resettlement	73	40.1	28	45.9	0.42	0.519
Emergency treatment	147	80 8	34	55.7	13.77	<0.001*
Health supervision of worker	114	62 6	34	55.7	0.65	0.421
Assessment of exposure	23	12 6	7	11.5	<0 01	0.989
General health surveillance	86	47.3	27	44.3	0.66	0.797
Specific health surveillance	97	53 3	24	39.3	3 02	0.082
Record keeping	134	73.6	39	63.9	1.65	0.199
Health screening	129	70 9	45	73.8	0 07	0.788
Immunisation	58	31.9	28	45.9	3.35	0 067
Familiarisation with work environment	100	54 9	30	49 2	0.40	0.527
Informing workers of health hazards	59	32 4	24	39.3	0.69	0.406
Occupational safety	28	15.4	18	29.5	5.05	0.025*
Individual counselling	128	70.3	49	80.3	1.83	0 176
Assisting socio-psychological problems	26	14.3	14	23 0	1.90	0.168
Health education & promotion	122	67.0	49	80 3	3 26	0 071
First-aid training for workers	97	53 3	24	39.3	3.02	0.082
Development & maintenance of records	112	61 5	34	55.7	0 42	0 516
Meetings & communication	81	44 5	45	73 8	14.52	<0 001*
Co-operation with outside agencies	49	26 9	19	31 1	0 22	0.637
Total number	182	100 0	61	100 0	-	-

[a] Chi-square test, df 1, * $P < 0\ 05$

Table A1.33 Comparison of the actual roles of OH nurses between total number of employees groups

Actual roles	1,000		1,000 - 4,999		≥ 5,000		X^2 [a]	P-value
	No	%	No.	%	No	%		
Therapeutic	47	52 2	39	47 6	15	34.1	4 00	0.135
Emergency responsibility	75	83 3	59	72.0	21	47.7	17.81	<0 001*
Health surveillance	70	77.8	68	82 9	31	70 5	2 59	0 275
Health screening	77	85.6	73	89 0	39	88 6	0 53	0.766
Environmental surveillance	31	34 4	27	32.9	27	61 4	11 03	0 004*
Consultant	31	34 4	21	25.6	15	34 1	1 84	0 399
Education	58	64.4	52	63.4	32	72 7	1.25	0.535
Training	31	34.4	37	45.1	18	40 9	2 08	0 354
Management	9	10 0	20	24.4	18	40 9	17.14	<0 001*
Research	1	1 1	5	6.1	2	4.5	3 51	0.173
Total number	90	100.0	82	100.0	44	100 0	-	-

[a] Chi-square test, df 2, * P 0.05.

Table A1.34 Comparison of the actual functions of OH nurses between total number of employees groups.

Actual functions	< 1,000		1,000 - 4,999		≥ 5,000		X^2 [a]	P-value
	No.	%	No.	%	No.	%		
Routine treatment	63	68.5	50	60.2	18	40.9	9.34	0.009*
Rehabilitation & resettlement	38	41.3	35	42.2	18	40.9	0.02	0.989
Emergency treatment	80	87.0	62	74.7	23	52.3	18.60	<0.001*
Health supervision of worker	53	57.6	54	65.1	25	56.8	1.30	0.523
Assessment of exposure	12	13.0	8	9.6	3	6.8	1.38	0.503
General health surveillance	45	48.9	46	55.4	11	25.0	11.50	0.003*
Specific health surveillance	44	47.8	41	49.4	27	61.4	2 36	0.307
Record keeping	74	80.4	56	67.5	26	59.1	7.62	0.022*
Health screening	62	67.4	60	72.3	35	79.5	2.26	0 323
Immunisation	27	29.3	32	38.6	20	45.5	3.71	0.156
Familiarisation with work environment	48	52.2	38	45.8	28	63.6	3.71	0.156
Informing workers of health hazards	33	35.9	27	32.5	17	38.6	0 51	0.777
Occupational safety	18	19 6	16	19.3	6	13.6	0 84	0.658
Individual counselling	61	66 3	58	69.9	39	88.6	8 80	0 012*
Assisting socio-psychological problems	14	15 2	13	15.7	10	22 7	1.26	0.531
Health education & promotion	62	67 4	56	67.5	37	84 1	5.17	0 075
First-aid training for workers	40	43 5	48	57 8	19	43 2	4 32	0 115
Development & maintenance of records	53	57 6	49	59 0	29	65 9	0 90	0 638
Meetings & communication	41	44 6	43	51.8	30	68 2	6 78	0 034*
Co-operation with outside agencies	27	29 3	19	22 9	13	29 5	1 13	0 568
Total number	92	100 0	83	100 0	44	100 0	-	-

[a] Chi-square test, df 2, * P 0 05

Table A1.35 Comparison of the actual roles of OH nurses between importance of OH department groups.

Actual roles	Low priority		Essential		Totally essential		X^2 [a]	P-value
	No	%	No.	%	No.	%		
Therapeutic	20	58 8	77	44.3	9	34 6	3.80	0 150
Emergency responsibility	27	79 4	121	69 5	19	73 1	1.47	0.480
Health surveillance	26	76 5	136	78 2	21	80 8	0 16	0 922
Health screening	32	94 1	149	85 6	23	88 5	2 18	0 335
Environmental surveillance	12	35 3	71	40 8	10	38.5	0 38	0 825
Consultant	6	17.6	61	35 1	6	23 1	5.26	0.072
Education	21	61.8	118	67 8	16	61.5	0.75	0 689
Training	12	35 3	70	40 2	15	57 7	3.42	0 181
Management	7	20 6	39	22 4	2	7.7	3.63	0.163
Research	2	5.9	6	3 4	2	7.7	1.11	0 575
Total number	34	100.0	174	100.0	26	100.0	-	-

[a] Chi-square test, df 2, * P < 0.05.

Table A1.36 Comparison of the actual functions of OH nurses between importance of OH department groups.

Actual functions	Low Priority		Essential		Totally Essential		X^2 [a]	P-value
	No.	%	No.	%	No.	%		
Routine treatment	25	73.5	96	54.2	17	65.4	5.16	0.076
Rehabilitation & resettlement	11	32 4	78	44.1	11	42 3	1.64	0.440
Emergency treatment	26	76 5	131	74 0	21	80.8	0.62	0.734
Health supervision of worker	17	50 0	106	59.9	19	73.1	3.34	0.188
Assessment of exposure	2	5.9	21	11.9	6	23.1	3.91	0.142
General health surveillance	17	50 0	85	48 0	8	30 8	3.00	0.223
Specific health surveillance	17	50.0	90	50 8	13	50.0	0.01	0.994
Record keeping	28	82 4	125	70 6	15	57.7	4.44	0.109
Health screening	23	67.6	131	74 0	16	61 5	1.99	0.370
Immunisation	12	35 3	58	32.8	13	50.0	2.84	0.241
Familiarisation with work environment	13	38 2	97	54.8	16	61.5	3.98	0.137
Informing workers of health hazards	12	35.3	61	34.5	8	30.8	0.16	0.922
Occupational safety	8	23.5	30	16.9	6	23.1	1.16	0 559
Individual counselling	26	76 5	132	74 6	15	57.7	3 26	0.196
Assisting socio-psychological problems	5	14 7	28	15.8	6	23.1	0.89	0 642
Health education & promotion	24	70 6	129	72 9	14	53.8	3.69	0.158
First-aid training for workers	20	58 8	86	48 6	13	50 0	1 20	0 548
Development & maintenance of records	22	64 7	110	62.1	12	46 2	2 63	0 269
Meetings & communication	18	52 9	93	52 5	11	42 3	0 99	0.611
Co-operation with outside agencies	8	23 5	50	28 2	8	30 8	0.45	0 799
Total number	34	100 0	177	100 0	26	100 0	-	-

[a] Chi-square test, df 2, * P 0 05.

Table A1.37 Comparison of the actual roles of OH nurses between OH policy groups.

Actual roles	Yes		No		X^2 [a]	P-value
	No.	%	No	%		
Therapeutic	59	37 3	47	62.7	12 15	<0.001*
Emergency responsibility	106	67.1	58	77.3	2 09	0 148
Health surveillance	129	81 6	53	70.7	2 97	0 085
Health screening	143	90 5	60	80 0	4.11	0 043*
Environment surveillance	64	40 5	28	37.3	0 10	0 749
Consultant	54	34.2	21	28.0	0.63	0.428
Education	100	63 3	54	72 0	1.35	0.244
Training	64	40 5	30	40.0	<0 01	1 000
Management	32	20 3	17	22.7	0.06	0.802
Research	7	4 4	3	4.0	<0.01	1 000
Total number	158	100 0	75	100 0	-	-

[a] Chi-square test, df 1, * $P < 0.05$.

Table A1.38 Comparison of the actual functions of OH nurses between OH policy groups.

Actual functions	Yes		No		X^2 [a]	P-value
	No.	%	No.	%		
Routine treatment	87	54.7	49	65.3	1.94	0.163
Rehabilitation & resettlement	76	47.8	25	33.3	3.78	0 052
Emergency treatment	115	72.3	60	80.0	1.21	0.271
Health supervision of worker	102	64.2	40	53.3	2.07	0.151
Assessment of exposure	21	13.2	9	12.0	<0.01	0.961
General health surveillance	79	49.7	27	36.0	3.32	0.068
Specific health surveillance	76	47.8	42	56.0	1.06	0.303
Record keeping	110	69.2	57	76.0	0.85	0.357
Health screening	119	74 8	46	61.3	3.85	0 049*
Immunisation	59	37.1	22	29.3	1.04	0 308
Familiarisation with work environment	91	57.2	35	46 7	1.88	0.170
Informing workers of health hazards	52	32.7	29	38.7	0.56	0.455
Occupational safety	23	14.5	23	30.7	7.47	0.006*
Individual counselling	112	70.4	60	80.0	1.93	0.165
Assisting socio-psychological problems	22	13 8	15	20.0	1 03	0.311
Health education & promotion	109	68 6	57	76 0	1.03	0.309
First-aid training for workers	83	52 2	33	44 0	1.06	0.303
Development & maintenance of records	96	60.4	42	56 0	0.24	0 622
Meetings & communication	86	54.1	34	45.3	1 23	0 267
Co-operation with outside agencies	42	26 4	23	30 7	0.27	0 602
Total number	159	100.0	75	100 0	-	-

[a] Chi-square test, df 1, * $P < 0.05$.

Table A1.39 Comparison of the actual roles of OH nurses between OH nursing policy groups.

Actual roles	Yes		No		X^2 [a]	P-value
	No	%	No	%		
Therapeutic	52	37 4	57	55 9	7 37	0.007*
Emergency responsibility	100	71 9	71	69 6	0 06	0 802
Health surveillance	108	77 7	80	78 4	<0.01	1 000
Health screening	126	90 6	85	83 3	2 26	0 133
Environment surveillance	60	43 2	36	35.3	1.21	0.271
Consultant	44	31 7	32	31.4	<0.01	1.000
Education	86	61 9	73	71.6	2.05	0 152
Training	57	41 0	41	40.2	<0.01	1.000
Management	35	25 2	16	15.7	2.63	0.105
Research	6	4 3	4	3.9	<0.01	1.000
Total number	139	100 0	102	100 0	-	-

[a] Chi-square test, df=1, * P < 0 05.

Table A1.40 Comparison of the actual functions of OH nurses between OH nursing policy groups.

Actual functions	Yes		No		X^2 [a]	P-value
	No.	%	No.	%		
Routine treatment	74	52.5	68	66.7	4.34	0.037*
Rehabilitation & resettlement	65	46 1	36	35 3	2.42	0.120
Emergency treatment	101	71 6	80	78.4	1.10	0.293
Health supervision of worker	94	66.7	54	52.9	4.12	0.042*
Assessment of exposure	20	14.2	10	9.8	0.68	0.408
General health surveillance	69	48 9	44	43.1	0.58	0 445
Specific health surveillance	67	47.5	54	52 9	0.50	0.481
Record keeping	100	70 9	73	71.6	<0.01	1.000
Health screening	104	73.8	70	68.6	0.53	0.465
Immunisation	55	39.0	31	30.4	1.56	0.211
Familiarisation with work environment	82	58.2	48	47.1	2.50	0.114
Informing workers of health hazards	43	30.5	40	39.2	1.63	0 201
Occupational safety	22	15 6	24	23.5	1.93	0.164
Individual counselling	100	70.9	77	75.5	0.41	0.520
Assisting socio-psychological problems	27	19.1	13	12 7	1 33	0.249
Health education & promotion	103	73.0	68	66 7	0 87	0.351
First-aid training for workers	70	49.6	51	50.0	<0.01	1 000
Development & maintenance of records	80	56.7	66	64 7	1.25	0.263
Meetings & communication	75	53 2	51	50 0	0 13	0.718
Co-operation with outside agencies	38	27 0	30	29 4	0.08	0 782
Total number	141	100 0	102	100 0	-	-

[a] Chi-square test, df 1, * P < 0.05.

Table A1.41 Comparison of the actual roles of OH nurses between total number of nurse groups.

Actual roles	Single nurse unit		Two nurse unit		Multiple nurse unit		X^2 [a]	P-value
	No	%	No	%	No	%		
Therapeutic	65	45.8	17	48.6	24	41 4	0 52	0 770
Emergency responsibility	112	78 9	21	60 0	36	62 1	8 52	0 014*
Health surveillance	113	79 6	27	77 1	43	74.1	0.71	0.702
Health screening	119	83 8	34	97.1	54	93.1	7 67	0 022*
Environmental surveillance	55	38.7	13	37.1	26	44.8	0.77	0.680
Consultant	45	31.7	11	31.4	18	31 0	<0.01	0 996
Education	94	66 2	23	65.7	38	65.5	<0.01	0 995
Training	56	39.4	14	40.0	23	39.7	<0 01	0 998
Management	24	16.9	11	31.4	15	25.9	4.36	0 113
Research	5	3 5	1	2.9	4	6.9	1.23	0.541
Total number	142	100.0	35	100 0	58	100.0	-	-

[a] Chi-square test, df=2, * P < 0.05.

Table A1.42 Comparison of the actual functions of OH nurses between total number of nurse groups.

Actual functions	Single nurse unit		Two nurse unit		Multiple nurse unit		X^2 [a]	P-value
	No.	%	No.	%	No.	%		
Routine treatment	87	60.8	22	62.9	30	50.8	2.00	0.367
Rehabilitation & resettlement	63	44.1	14	40 0	21	35.6	1.28	0 529
Emergency treatment	113	79.0	28	80.0	36	61.0	7.34	0 025*
Health supervision of worker	84	58.7	25	71.4	37	62.7	2.01	0.366
Assessment of exposure	21	14.7	4	11.4	4	6.8	2.69	0.261
General health surveillance	69	48.3	17	48 6	25	42.4	0 63	0 729
Specific health surveillance	68	47.6	18	51.4	33	55.9	1.20	0 549
Record keeping	105	73.4	26	74.3	39	66.1	1.21	0 546
Health screening	95	66.4	29	82.9	44	74 6	4.43	0.109
Immunisation	44	30.8	16	45.7	24	40 7	3 65	0 161
Familiarisation with work environment	74	51.7	20	57.1	32	54.2	0.37	0 833
Informing workers of health hazards	50	35.0	9	25.7	23	39.0	1.78	0 410
Occupational safety	28	19.6	4	11.4	12	20 3	1.54	0 462
Individual counselling	99	69.2	32	91.4	42	71.2	8 62	0 013*
Assisting socio-psychological problems	19	13.3	8	22.9	10	16.9	1.94	0.378
Health education & promotion	102	71.3	23	65.7	43	72 9	0.57	0 753
First-aid training for workers	71	49 7	14	40 0	31	52 5	1.46	0 481
Development & maintenance of records	81	56 6	20	57 1	43	72 9	5 02	0 081
Meetings & communication	77	53 8	13	37.1	32	54.2	3 40	0 182
Co-operation with outside agencies	40	28 0	7	20 0	20	33 9	2 16	0 339
Total number	143	100 0	35	100 0	59	100 0	-	-

[a] Chi-square test, df=2, * P 0 05.

Table A1.43 Comparison of the actual roles of OH nurses between full-time doctor groups.

Actual roles	Yes		No		X^2 [a]	P-value
	No	%	No	%		
Therapeutic	25	41.7	82	46 6	0.26	0 609
Emergency responsibility	33	55.0	137	77 8	10 48	0 001*
Health surveillance	44	73.3	139	79 0	0 53	0.468
Health screening	54	90 0	154	87.5	0.08	0.775
Environment surveillance	29	48.3	65	36 9	1.97	0.160
Consultant	23	38 3	52	29.5	1.21	0 270
Education	38	63 3	118	67 0	0.13	0 714
Training	26	43.3	68	38 6	0 24	0 625
Management	16	26 7	33	18.8	1.26	0 262
Research	4	6 7	6	3 4	0.51	0.478
Total number	60	100 0	176	100 0	-	-

[a] Chi-square test, df 1, * $P < 0.05$.

Table A1.44 Comparison of the actual functions of OH nurses between full-time doctor groups.

Actual functions	Yes		No		X^2 [a]	P-value
	No.	%	No	%		
Routine treatment	28	47.5	111	62.0	3.29	0.070
Rehabilitation & resettlement	24	40.7	74	41.3	<0.01	1.000
Emergency treatment	35	59.3	142	79 3	8.30	0.004*
Health supervision of worker	38	64 4	107	59.8	0.23	0 632
Assessment of exposure	5	8.5	24	13.4	0.60	0.438
General health surveillance	24	40.7	88	49.2	0.96	0.326
Specific health surveillance	32	54 2	88	49 2	0.28	0.599
Record keeping	41	69.5	129	72.1	0.05	0 831
Health screening	46	78 0	124	69.3	1.24	0.265
Immunisation	24	40 7	62	34.6	0.46	0.496
Familiarisation with work environment	36	61.0	91	50.8	1.46	0.227
Informing workers of health hazards	18	30.5	65	36 3	0.43	0.513
Occupational safety	11	18 6	33	18.4	<0 01	1.000
Individual counselling	46	78 0	127	70.9	0.78	0.379
Assisting socio-psychological problems	7	11 9	30	16.8	0 48	0 489
Health education & promotion	46	78 0	123	68.7	1.42	0.233
First-aid training for workers	29	49 2	88	49.2	<0 01	1 000
Development & maintenance of records	36	61 0	107	59 8	<0.01	0.988
Meetings & communication	36	61 0	88	49 2	2 05	0.153
Co-operation with outside agencies	19	32 2	48	26 8	0 40	0 528
Total number	59	100 0	179	100 0	-	-

[a] Chi-square test, df 1, * P 0.05

Table A1.45 Comparison of the actual roles of OH nurses between full-time industrial hygienist groups.

Actual roles	Yes		No		X^2 [a]	P-value
	No	%	No	%		
Therapeutic	14	42 4	94	46 1	0 04	0.839
Emergency responsibility	24	72 7	147	72 1	<0.01	1 000
Health surveillance	27	81 8	157	77.0	0 16	0.692
Health screening	29	87 9	179	87.7	<0 01	1 000
Environment surveillance	11	33 3	84	41.2	0 44	0.508
Consultant	10	30.3	65	31 9	<0 01	1.000
Education	20	60.6	135	66 2	0.18	0.669
Training	18	54.5	76	37 3	2 86	0 091
Management	7	21.2	42	20.6	<0 01	1.000
Research	2	6.1	8	3 9	0 01	0.902
Total number	33	100.0	204	100 0	-	-

[a] Chi-square test, df 1, * $P < 0.05$.

Table A1.46 Comparison of the actual functions of OH nurses between full-time industrial hygienist groups.

Actual functions	Yes		No		X^2 [a]	P-value
	No.	%	No.	%		
Routine treatment	20	60.6	121	58.7	<0 01	0.990
Rehabilitation & resettlement	14	42.4	85	41.3	<0.01	1.000
Emergency treatment	25	75.8	154	74.8	<0.01	1.000
Health supervision of worker	24	72.7	120	58.3	1.92	0.166
Assessment of exposure	1	3.0	28	13.6	2 07	0.150
General health surveillance	17	51.5	94	45.6	0.19	0.659
Specific health surveillance	18	54.5	100	48.5	0.20	0 651
Record keeping	21	63.6	151	73.3	0 88	0 348
Health screening	22	66.7	148	71.8	0.16	0.687
Immunisation	15	45.5	71	34.5	1.05	0 305
Familiarisation with work environment	16	48.5	111	53.9	0.15	0 697
Informing workers of health hazards	7	21 2	75	36.4	2.28	0.131
Occupational safety	4	12.1	41	19.9	0.68	0.411
Individual counselling	22	66.7	152	73.8	0.41	0 520
Assisting socio-psychological problems	5	15 2	33	16 0	<0 01	1 000
Health education & promotion	26	78.8	143	69.4	0 80	0.372
First-aid training for workers	15	45 5	103	50 0	0.09	0 766
Development & maintenance of records	24	72 7	120	58.3	1.92	0 166
Meetings & communication	18	54 5	105	51 0	0 04	0.846
Co-operation with outside agencies	11	33 3	57	27.7	0.21	0.644
Total number	33	100 0	206	100 0	-	-

[a] Chi-square test, df 1, * $P < 0$ 05.

Table A1.47 Comparison of the actual roles of OH nurses between full-time safety officer groups.

Actual roles	Yes		No		X^2 [a]	P-value
	No	%	No.	%		
Therapeutic	17	35 4	91	47 4	1 77	0.184
Emergency responsibility	39	81.3	132	68 8	2 35	0.125
Health surveillance	37	77.1	150	78.1	<0.01	1 000
Health screening	41	85.4	169	88 0	0 06	0 807
Environment surveillance	20	41 7	76	39.6	<0 01	0 921
Consultant	13	27.1	63	32.8	0 35	0.555
Education	35	72 9	123	64.1	0 97	0 324
Training	21	43 8	76	39.6	0.13	0.718
Management	7	14 6	44	22.9	1.13	0.287
Research	2	4.2	8	4.2	<0.01	1 000
Total number	48	100.0	192	100.0	-	-

[a] Chi-square test, df=1, * P < 0.05.

Table A1.48 Comparison of the actual functions of OH nurses between full-time safety officer groups.

Actual functions	Yes		No		X^2 [a]	P-value
	No.	%	No.	%		
Routine treatment	25	52.1	116	59.8	0.65	0.420
Rehabilitation & resettlement	27	56 3	74	38.1	4.47	0.035*
Emergency treatment	36	75.0	144	74.2	<0.01	1.000
Health supervision of worker	29	60.4	118	60.8	<0.01	1.000
Assessment of exposure	7	14 6	22	11.3	0.14	0.710
General health surveillance	25	52.1	87	44 8	0.55	0.460
Specific health surveillance	28	58.3	93	47.9	1.27	0.259
Record keeping	28	58.3	145	74.7	4.31	0.038*
Health screening	33	68 8	140	72.2	0.08	0.771
Immunisation	15	31.3	71	36.6	0 28	0.600
Familiarisation with work environment	25	52.1	104	53.6	<0.01	0.978
Informing workers of health hazards	18	37.5	65	33.5	0.12	0 725
Occupational safety	10	20.8	36	18.6	0.02	0.878
Individual counselling	33	68 8	143	73.7	0.26	0.610
Assisting socio-psychological problems	8	16.7	32	16.5	<0.01	1.000
Health education & promotion	34	70.8	137	70 6	<0 01	1.000
First-aid training for workers	25	52.1	95	49 0	0 05	0 822
Development & maintenance of records	28	58.3	117	60 3	<0.01	0.932
Meetings & communication	27	56 3	99	51.0	0.24	0 626
Co-operation with outside agencies	13	27 1	55	28 4	<0 01	1 000
Total number	48	100 0	194	100 0	-	-

[a] Chi-square test, df=1, * P < 0 01

Table A1.49 Comparison of the actual roles of OH nurses between full-time manager groups.

Actual roles	Yes		No		X^2 [a]	P-value
	No	%	No	%		
Therapeutic	16	28 6	92	50 3	7.30	0 007*
Emergency responsibility	40	71 4	131	71 6	<0 01	1 000
Health surveillance	46	82 1	140	76 5	0 50	0 481
Health screening	49	87 5	160	87 4	<0 01	1 000
Environment surveillance	23	41 1	73	39 9	<0 01	0 998
Consultant	16	28 6	60	32 8	0 18	0 668
Education	43	76 8	114	62 3	3.38	0.066
Training	21	37 5	75	41.0	0 10	0 757
Management	11	19 6	39	21.3	<0 01	0 936
Research	2	3 6	8	4 4	<0 01	1.000
Total number	56	100 0	183	100 0	-	-

[a] Chi-square test, df 1, * P < 0.05.

Table A1.50 Comparison of the actual functions of OH nurses between full-time manager groups.

Actual functions	Yes		No		X^2 [a]	P-value
	No.	%	No.	%		
Routine treatment	26	46.4	115	62.2	3.76	0.052
Rehabilitation & resettlement	23	41.1	77	41.6	< 0 01	1.000
Emergency treatment	40	71.4	140	75.7	0.22	0.642
Health supervision of worker	34	60.7	112	60.5	<0.01	1.000
Assessment of exposure	6	10.7	23	12.4	0 01	0.911
General health surveillance	24	42.9	88	47.6	0.22	0.641
Specific health surveillance	32	57.1	88	47.6	1 22	0 270
Record keeping	38	67.9	135	73.0	0 33	0.565
Health screening	42	75.0	130	70 3	0.27	0 605
Immunisation	23	41.1	63	34.1	0.64	0.423
Familiarisation with work environment	31	55.4	97	52 4	0.05	0.817
Informing workers of health hazards	21	37.5	62	33.5	0.15	0.697
Occupational safety	9	16.1	36	19 5	0.14	0.708
Individual counselling	40	71.4	135	73.0	<0.01	0.955
Assisting socio-psychological problems	12	21.4	27	14 6	1 02	0 313
Health education & promotion	40	71.4	131	70 8	<0 01	1.000
First-aid training for workers	31	55.4	88	47 6	0.76	0 385
Development & maintenance of records	34	60.7	111	60 0	<0 01	1 000
Meetings & communication	29	51.8	96	51 9	<0 01	1 000
Co-operation with outside agencies	15	26.8	53	28 6	0 01	0 919
Total number	56	100 0	185	100 0	-	-

[a] Chi-square test, df=1, * P 0.05.

Table A1.51 Comparison of the actual roles of OH nurses between full-time secretaries groups.

Actual roles	Yes		No		$X^{2\,a}$	P-value
	No.	%	No.	%		
Therapeutic	35	38.9	73	49.3	2 06	0 152
Emergency responsibility	54	60 0	117	79.1	9 13	0 003*
Health surveillance	66	73 3	119	80 4	1.23	0 267
Health screening	79	87 8	129	87 2	<0.01	1 000
Environment surveillance	43	47 8	52	35.1	3.22	0 072
Consultant	29	32 2	46	31.1	<0.01	0.968
Education	65	72.2	92	62 2	2.09	0 148
Training	36	40 0	59	39 9	<0.01	1 000
Management	25	27.8	25	16.9	3.37	0 067
Research	6	6 7	4	2.7	1.31	0 252
Total number	90	100.0	148	100.0	-	-

[a] Chi-square test, df=1, * P < 0.05.

Table A1.52 Comparison of the actual functions of OH nurses between full-time secretaries groups

Actual functions	Yes		No		$X^{2\,a}$	P-value
	No.	%	No.	%		
Routine treatment	43	47.8	98	65.3	6.45	0 011*
Rehabilitation & resettlement	39	43.3	61	40.7	0.07	0.787
Emergency treatment	56	62.2	123	82.0	10.59	0 001*
Health supervision of worker	58	64.4	88	58 7	0.56	0.453
Assessment of exposure	12	13.3	17	11.3	0.07	0.798
General health surveillance	36	40.0	76	50.7	2.16	0.142
Specific health surveillance	50	55.6	69	46.0	1.69	0.194
Record keeping	60	66.7	112	74.7	1.40	0.237
Health screening	65	72.2	106	70.7	0.01	0 912
Immunisation	38	42.2	47	31.3	2.46	0 117
Familiarisation with work environment	55	61.1	73	48.7	3.02	0 082
Informing workers of health hazards	31	34.4	51	34.0	<0.01	1 000
Occupational safety	19	21.1	26	17.3	0.31	0 579
Individual counselling	64	71.1	110	73 3	0.05	0.823
Assisting socio-psychological problems	15	16.7	24	16 0	<0.01	1 000
Health education & promotion	67	74.4	104	69 3	0.49	0.484
First-aid training for workers	42	46.7	76	50 7	0 22	0.641
Development & maintenance of records	55	61.1	89	59 3	0 02	0 892
Meetings & communication	52	57 8	72	48 0	1.78	0 182
Co-operation with outside agencies	29	32 2	39	26 0	0 79	0 375
Total number	90	100.0	150	100 0	-	-

[a] Chi-square test, df 1, * P 0 05.

Table A1.53 Comparison of the actual roles of OH nurses between department relationship groups.

Actual roles	Negative		Neutral		Positive		X^2 [a]	P-value
	No	%	No.	%	No	%		
Therapeutic	8	57.1	14	37 8	83	47.2	1.79	0 408
Emergency responsibility	11	78 6	30	81 1	121	68.8	2 81	0.245
Health surveillance	9	64 3	28	75.7	142	80.7	2.14	0 343
Health screening	13	92.9	34	91 9	153	86 9	1.13	0 568
Environmental surveillance	5	35 7	12	32.4	74	42.0	1.32	0.517
Consultant	4	28.6	11	29.7	54	30.7	0.04	0 982
Education	10	71.4	24	64.9	115	65.3	0 23	0 891
Training	2	14 3	15	40.5	76	43.2	5.09	0 078
Management	2	14.3	13	35.1	30	17.0	5 88	0.053
Research	1	7.1	1	2.7	7	4 0	0 48	0.788
Total number	14	100 0	37	100.0	176	100.0	-	-

[a] Chi-square test, df 2, * P < 0 05.

Table A1.54 Comparison of the actual functions of OH nurses between department relationship groups.

Actual functions	Negative		Neutral		Positive		X^2 [a]	P-value
	No.	%	No.	%	No	%		
Routine treatment	6	46.2	20	54.1	108	60.7	1.44	0.486
Rehabilitation & resettlement	4	30.8	12	32.4	80	44.9	2.76	0.252
Emergency treatment accident	8	61.5	26	70.3	138	77.5	2.17	0.339
Health supervision of worker	6	46.2	18	48.6	114	64.0	4 16	0.125
Assessment of exposure	0	0.0	4	10.8	24	13.5	3.72	0.156
General health surveillance	7	53.8	19	51.4	81	45.5	0.68	0.710
Specific health surveillance	6	46.2	21	56.8	90	50.6	0 62	0.734
Record keeping	8	61.5	24	64.9	129	72.5	1 36	0.507
Health screening	10	76 9	26	70 3	127	71.3	0 22	0.894
Immunisation	5	38 5	13	35.1	65	36.5	0 05	0.975
Familiarisation with work environment	7	53.8	19	51.4	92	51.7	0 03	0.987
Informing workers of health hazards	3	23.1	15	40.5	61	34.3	1 39	0.500
Occupational safety	3	23.1	9	24 3	28	15.7	1 75	0.417
Individual counselling	11	84.6	26	70.3	132	74.2	1 11	0.574
Assisting socio-psychological problems	0	0.0	7	18.9	28	15.7	4 69	0.096
Health education & promotion	12	92.3	26	70 3	124	69.7	3 81	0.149
First-aid training for workers	6	46 2	23	62 2	83	46 6	3 3	0 220
Development & maintenance of records	8	61.5	22	59.5	107	60 1	0 02	0 991
Meetings & communication	10	76 9	23	62.2	84	47.2	6 59	0.037*
Co-operation with outside agencies	3	23.1	11	29 7	48	27 0	0 24	0 888
Total number	13	100 0	37	100 0	178	100 0	-	-

[a] Chi-square test, df 2, * P 0 05.

Table A1.55 Comparison of the actual roles of OH nurses between contact member with medical officers groups.

Actual roles	Yes		No		X^2 [a]	P-value
	No.	%	No.	%		
Therapeutic	81	41 3	22	61.1	4.05	0.044*
Emergency responsibility	131	66 8	33	91.7	7 89	0 005*
Health surveillance	154	78.6	27	75.0	0 07	0 797
Health screening	173	88 3	31	86.1	<0 01	0 931
Environment surveillance	81	41.3	12	33.3	0 51	0 475
Consultant	65	33.2	8	22.2	1.22	0.270
Education	129	65.8	25	69.4	0 05	0 817
Training	86	43 9	11	30 6	1.70	0 192
Management	40	20.4	7	19.4	<0.01	1.000
Research	8	4.1	2	5 6	<0.01	1 000
Total number	196	100.0	36	100 0	-	-

[a] Chi-square test, df=1, * P < 0.05.

Table A1.56 Comparison of the actual functions of OH nurses between contact member with medical officers groups.

Actual functions	Yes		No		X^2 [a]	P-value
	No.	%	No.	%		
Routine treatment	109	55.1	26	72.2	3.01	0.083
Rehabilitation & resettlement	83	41.9	14	38.9	0.02	0.876
Emergency treatment	143	72.2	31	86.1	2.40	0.122
Health supervision of worker	120	60.6	21	58.3	<0.01	0.943
Assessment of exposure	27	13.6	1	2.8	2.46	0.117
General health surveillance	89	44.9	20	55.6	0.98	0 321
Specific health surveillance	103	52.0	15	41.7	0.92	0.336
Record keeping	139	70.2	27	75.0	0.15	0.701
Health screening	141	71.2	28	77.8	0.37	0 544
Immunisation	77	38 9	7	19.4	4.20	0.041*
Familiarisation with work environment	104	52.5	19	52.8	<0.01	1.000
Informing workers of health hazards	65	32.8	17	47.2	2.18	0.140
Occupational safety	39	19.7	4	11.1	0.98	0.322
Individual counselling	146	73.7	25	69.4	0.11	0.741
Assisting socio-psychological problems	32	16 2	6	16 7	<0.01	1.000
Health education & promotion	139	70 2	25	69 4	<0.01	1.000
First-aid training for workers	100	50 5	18	50.0	<0 01	1.000
Development & maintenance of records	122	61.6	19	52 8	0.66	0.417
Meetings & communication	106	53 5	15	41 7	1 28	0.259
Co-operation with outside agencies	58	29.3	9	25 0	0 10	0 746
Total number	198	100 0	36	100 0	-	-

[a] Chi-square test, df 1, * P < 0 05.

Table A1.57 Comparison of the actual roles of OH nurses between contact member with nursing colleagues groups

Actual roles	Yes		No		X^2 [a]	P-value
	No	%	No	%		
Therapeutic	61	43 9	42	45 2	<0 01	0 955
Emergency responsibility	92	66 2	72	77 4	2 87	0 090
Health surveillance	107	77.0	74	79 6	0 09	0 760
Health screening	126	90 6	78	83 9	1.81	0 178
Environment surveillance	55	39.6	38	40 9	<0.01	0 952
Consultant	46	33.1	27	29 0	0 26	0.611
Education	91	65.5	63	67 7	0.05	0 828
Training	61	43 9	36	38.7	0.42	0 517
Management	33	23.7	14	15 1	2.09	0 148
Research	8	5.8	2	2.2	0.99	0 320
Total number	139	100.0	93	100 0	-	-

[a] Chi-square test, df 1, * P < 0 05.

Table A1.58 Comparison of the actual functions of OH nurses between contact member with nursing colleagues groups.

Actual functions	Yes		No		X^2 [a]	P-value
	No.	%	No.	%		
Routine treatment	80	57.1	55	58.5	<0.01	0 942
Rehabilitation & resettlement	53	37.9	44	46.8	1.51	0 220
Emergency treatment	98	70 0	76	80 9	2.93	0 087
Health supervision of worker	82	58 6	59	62.8	0.26	0 612
Assessment of exposure	12	8.6	16	17.0	3.05	0 081
General health surveillance	62	44.3	47	50.0	0.53	0 468
Specific health surveillance	75	53.6	43	45.7	1.08	0.298
Record keeping	97	69.3	69	73.4	0.28	0 594
Health screening	102	72.9	67	71.3	0.01	0 908
Immunisation	53	37.9	31	33.0	0.39	0.533
Familiarisation with work environment	73	52.1	50	53 2	<0.01	0 981
Informing workers of health hazards	46	32 9	36	38.3	0.51	0.474
Occupational safety	25	17.9	18	19.1	<0 01	0.938
Individual counselling	107	76 4	64	68.1	1 59	0.208
Assisting socio-psychological problems	20	14 3	18	19.1	0 65	0 419
Health education & promotion	102	72.9	62	66.0	0.97	0.325
First-aid training for workers	73	52 1	45	47.9	0 26	0 612
Development & maintenance of records	81	57 9	60	63.8	0 61	0 436
Meetings & communication	83	59 3	38	40.4	7.27	0 007*
Co-operation with outside agencies	43	30 7	24	25.5	0 51	0.476
Total number	140	100.0	94	100.0	-	-

[a] Chi-square test, df 1, * P < 0 05.

Table A1.59 Comparison of the actual roles of OH nurses between contact member with medical attendants groups.

Actual roles	Yes		No		X^2 [a]	P-value
	No.	%	No	%		
Therapeutic	14	48.3	89	43 8	0.06	0.803
Emergency responsibility	27	93.1	137	67.5	6 85	0.009*
Health surveillance	20	69.0	161	79 3	1.04	0 308
Health screening	26	89 7	178	87 7	<0.01	1.000
Environment surveillance	9	31.0	84	41.4	0 74	0.389
Consultant	7	24.1	66	32.5	0.48	0.487
Education	22	75.9	132	65 0	0.89	0.344
Training	7	24.1	90	44 3	3.46	0 063
Management	8	27.6	39	19.2	0 64	0.422
Research	0	0.0	10	4.9	0.54	0.463
Total number	29	100.0	203	100.0	-	-

[a] Chi-square test, df 1, * P < 0.05.

Table A1.60 Comparison of the actual functions of OH nurses between contact member with medical attendants groups.

Actual functions	Yes		No		X^2 [a]	P-value
	No.	%	No.	%		
Provision of a routine treatment service	25	83.3	110	53 9	8.10	0.004*
Rehabilitation & resettlement	13	43.3	84	41.2	<0.01	0.980
Emergency treatment for accident & illness	28	93.3	146	71.6	5.41	0.020*
Health supervision of worker	18	60.0	123	60 3	<0.01	1.000
Assessment of the nature & degree of exposure	1	3.3	27	13.2	1.59	0.208
General health surveillance	18	60.0	91	44 6	1.91	0.167
Specific health surveillance	17	56.7	101	49 5	0.29	0 592
Record keeping	22	73.3	144	70 6	<0.01	0 925
Health screening	22	73.3	147	72.1	<0.01	1.000
Immunisation	9	30.0	75	36.8	0.27	0 605
Familiarisation with work environment	15	50.0	108	52.9	0.01	0.916
Informing workers of health hazards	12	40.0	70	34 3	0.16	0 686
Occupational safety	6	20.0	37	18.1	<0 01	1 000
Individual counselling	19	63.3	152	74 5	1.14	0 285
Assisting workers with socio-psychological problems	3	10.0	35	17.2	0.53	0 467
Health education & promotion	23	76.7	141	69.1	0 40	0 529
First-aid training for workers	13	43 3	105	51 5	0.41	0 524
Development & maintenance of records	12	40 0	129	63 2	4.97	0 026*
Meetings & communication	13	43 3	108	52 9	0 62	0 431
Co-operation with outside agencies	6	20 0	61	29 9	0 82	0.366
Total number	30	100 0	204	100 0	-	-

[a] Chi-square test, df 1, * P 0.05.

Table A1.61 Comparison of the actual roles of OH nurses between contact member with industrial hygienists groups.

Actual roles	Yes		No		X^2 [a]	P-value
	No.	%	No	%		
Therapeutic role	6	30 0	97	45.8	1.25	0.263
Emergency responsibility role	15	75 0	149	70 3	0.03	0 852
Health surveillance role	16	80 0	165	77 8	<0.01	1.000
Health screening role	18	90 0	186	87.7	0 01	1 00
Environmental surveillance role	9	45 0	84	39 6	0.05	0.818
Consultant role	7	35 0	66	31 1	0.01	0.917
Education role	12	60 0	142	67.0	0.15	0.701
Training role	15	75 0	82	38.7	8 47	0 004*
Management role	2	10 0	45	21.2	0.82	0 366
Research role	0	0.0	10	4 7	0.17	0.677
Total number	20	100.0	212	100 0	-	-

[a] Chi-square test, df 1, * P < 0.05.

Table A1.62 Comparison of the actual functions of OH nurses between contact member with industrial hygienists groups.

Actual functions	Yes		No		X^2 [a]	P-value
	No.	%	No.	%		
Provision of a routine treatment service	12	60.0	123	57.5	<0.01	1.000
Rehabilitation & resettlement	6	30.0	91	42.5	0.72	0.395
Emergency treatment for accident & illness	14	70 0	160	74 8	0 04	0.842
Health supervision of worker	14	70.0	127	59.3	0.48	0.489
Assessment of the nature & degree of exposure	1	5.0	27	12 6	0.41	0.520
General health surveillance	6	30 0	103	48.1	1.74	0.187
Specific health surveillance	9	45.0	109	50 9	0.07	0.784
Record keeping	15	75.0	151	70 6	0.26	0.872
Health screening	12	60.0	157	73 4	1 03	0 310
Immunisation	9	45.0	75	35.0	0.41	0 520
Familiarisation with work environment	11	55.0	112	52 3	<0.01	1.000
Informing workers of health hazards	6	30 0	76	35.5	0.06	0.803
Occupational safety	1	5.0	42	19 6	1.72	0 189
Individual counselling	15	75.0	156	72 9	<0.01	1.000
Assisting workers with socio-psychological problems	4	20 0	34	15 9	0.03	0 873
Health education & promotion	12	60 0	152	71 0	0.60	0.439
First-aid training for workers	13	65.0	105	49.1	1.28	0 259
Development & maintenance of records	14	70 0	127	59.3	0 48	0 489
Meetings & communication	11	55 0	110	51 4	<0 01	0 941
Co-operation with outside agencies	8	40 0	59	27 6	0.84	0 359
Total number	20	100 0	214	100 0	-	-

[a] Chi-square test, df 1, * P 0 05.

Table A1.63 Comparison of the actual roles of OH nurses between contact member with safety officers groups.

Actual roles	Yes		No		X^2 [a]	P-value
	No	%	No	%		
Therapeutic role	54	47.0	49	41.9	0 42	0.518
Emergency responsibility role	93	80 9	71	60.7	10.45	0.001*
Health surveillance role	91	79.1	90	76 9	0.06	0 805
Health screening role	100	87 0	104	88 9	0 06	0 802
Environmental surveillance role	45	39.1	48	41.0	0 03	0.872
Consultant role	30	26.1	43	36 8	2 58	0.108
Education role	75	65.2	79	67.5	0 05	0 816
Training role	49	42 6	48	41.0	0 01	0.911
Management role	14	12 2	33	28.2	8.26	0.004*
Research role	3	2.6	7	6 0	0 89	0.346
Total number	115	100 0	117	100.0	-	-

[a] Chi-square test, df 1, * P < 0.05.

Table A1.64 Comparison of the actual functions of OH nurses between contact member with safety officers groups.

Actual functions	Yes		No		X^2 [a]	P-value
	No.	%	No.	%		
Provision of a routine treatment service	75	65 2	60	50.4	4.66	0.031*
Rehabilitation & resettlement	45	39.1	52	43.7	0.33	0.564
Emergency treatment for accident & illness	95	82 6	79	66 4	7.24	0.007*
Health supervision of worker	63	54.8	78	65.5	2.40	0.122
Assessment of the nature & degree of exposure	15	13 0	13	10.9	0.09	0.766
General health surveillance	58	50 4	51	42.9	1.06	0.303
Specific health surveillance	67	58 3	51	42.9	4.95	0.026*
Record keeping	84	73 0	82	68.9	0.31	0.581
Health screening	79	68 7	90	75.6	1.08	0.299
Immunisation	32	27.8	52	43.7	5.73	0.017*
Familiarisation with work environment	60	52.2	63	52.9	<0.01	1.000
Informing workers of health hazards	42	36 5	40	33 6	0.11	0.742
Occupational safety	22	19 1	21	17.6	0.02	0.901
Individual counselling	81	70 4	90	75 6	0.56	0.454
Assisting workers with socio-psychological problems	15	13 0	23	19 3	1.27	0.260
Health education & promotion	79	68 7	85	71 4	0 10	0.754
First-aid training for workers	58	50 4	60	50 4	<0.01	1 000
Development & maintenance of records	71	61 7	70	58 8	0 10	0.747
Meetings & communication	52	45 2	69	58 0	3 32	0.068
Co-operation with outside agencies	29	25 2	38	31 9	0 98	0 321
Total number	115	100 0	119	100 0	-	-

[a] Chi-square test, df 1, * P 0 05.

Table A1.65 Comparison of the actual roles of OH nurses between contact member with managers groups.

Actual roles	Yes		No		X^2 [a]	P-value
	No.	%	No	%		
Therapeutic role	42	40.8	61	47.3	0 74	0 391
Emergency responsibility role	72	69 9	92	71 3	<0.01	0 928
Health surveillance role	86	83 5	95	73 6	2.69	0.101
Health screening role	88	85 4	116	89 9	0 70	0 401
Environmental surveillance role	40	38 8	53	41.1	0 05	0 832
Consultant role	27	26.2	46	35.7	1.95	0.162
Education role	70	68 0	84	65 1	0 10	0.752
Training role	43	41 7	54	41 9	<0 01	1 000
Management role	22	21.4	25	19.4	0.04	0 835
Research role	5	4.9	5	3 9	<0 01	0 969
Total number	103	100.0	129	100.0	-	-

[a] Chi-square test, df 1, * P < 0 05.

Table A1.66 Comparison of the actual functions of OH nurses between contact member with managers groups.

Actual functions	Yes		No		X^2 [a]	P-value
	No.	%	No.	%		
Provision of a routine treatment service	53	51.0	82	63.1	3.00	0.083
Rehabilitation & resettlement	46	44.2	51	39.2	0.41	0 524
Emergency treatment for accident & illness	75	72.1	99	76.2	0.31	0.581
Health supervision of worker	66	63.5	75	57 7	0.58	0.446
Assessment of the nature & degree of exposure	17	16.3	11	8 5	2.70	0 100
General health surveillance	49	47.1	60	46.2	<0.01	0.988
Specific health surveillance	44	42.3	74	56 9	4.37	0 037
Record keeping	73	70.2	93	71.5	<0.01	0.936
Health screening	78	75.0	91	70 0	0.49	0.483
Immunisation	38	36.5	46	35 4	<0 01	0.964
Familiarisation with work environment	58	55.8	65	50 0	0 56	0.455
Informing workers of health hazards	39	37 5	43	33 1	0.32	0.571
Occupational safety	21	20.2	22	16.9	0.22	0 637
Individual counselling	76	73 1	95	73 1	<0.01	1.000
Assisting workers with socio-psychological problems	19	18.3	19	14 6	0 33	0 565
Health education & promotion	71	68.3	93	71 5	0.16	0 690
First-aid training for workers	54	51 9	64	49 2	0.08	0.781
Development & maintenance of records	63	60.6	78	60 0	<0 01	1.000
Meetings & communication	51	49.0	70	53 8	0 36	0.549
Co-operation with outside agencies	25	24 0	42	32.3	1 55	0 213
Total number	104	100 0	130	100 0	-	-

[a] Chi-square test, df 1, * P < 0 05.

Appendix A2. Conceptual Classification of Occupational Health Nursing Practice

Six OH nurses' general responsibilities were defined by the researcher as: promotion, protection, prevention, care, management and research. (*Table A2.1*)

The specific responsibility associated with the general responsibility of promotion was identified as the promotion of health. The roles involved in promotion were identified as educator, trainer, consultant or adviser or informant and counsellor, and the corresponding functions that were identified were health education and promotion, and health and safety education, first aid training for workers, informing workers about health hazards, individual counselling and assisting workers with psycho-social problems.

Similarly, the specific responsibility of OH nurses towards protection was seen by the key persons as the protection of health. The two roles thought to be most relevant to general and specific protection were the environmental surveillance role and the immuniser. The associated functions identified by the key persons were: familiarisation with the work environment and occupational safety, and performing immunisation policy and procedures respectively.

In terms of prevention, the specific responsibility of the OH nurse was deemed to be towards the prevention of ill-health, injury and disability. According to the key persons the health surveillance role and the health screening role were the most important roles in relation to prevention, with the following functions being most relevant to the role of health surveillance: health supervision of the worker, assessment of the nature and degree of exposure, and undertaking general and specific health surveillance. The function most associated with the role of health screening was the performance of screening people for specific disorders or diseases.

Regarding the responsibility of care, three specific responsibilities were identified as: curative care, emergency service and restoration of health. The following roles were thought to be of importance with regard to these responsibilities: Care provider of treatment, emergency care giver, and rehabilitator. Provision of a routine treatment service, emergency treatment for injuries and illness, and rehabilitation and resettlement were the identified functions that OH nurses were expected to perform in order to fulfil the associated responsibilities of their role.

The specific responsibilities related to the general responsibility of management was divided into management, communication and administration, with the associated roles as manager, communicator and administrator as expected. The functions identified with the manager role were: policy decision-making, budget planning, OH programme development and disaster planning, the functions thought to influence the role of communicator were involvement in meetings and communications, and co-operation with outside agencies; while the functions identified with the administrator role were: record keeping, and the development and maintenance of records.

Like communication, research was identified as both a general and specific responsibility of the OH nurse according to the key persons. The identified role was that of researcher and the identified function was epidemiological studies.

Table A2.1 General responsibilities, specific responsibilities, roles and functions of OH nurses

General responsibilities	Specific responsibilities	Roles	Functions
Promotion	Promotion of health	Educator	Health education and promotion Health and safety education
		Trainer	First-aid training for workers
		Consultant/Adviser/ Informant	Informing workers about health hazards
		Counsellor	Individual counselling Assisting workers with psycho-social problems
Protection	Protection of health	Environmental surveillance	Familiarisation with the work environment Occupational safety
		Immuniser	Immunisation
Prevention	Prevention of ill health, injury (disability)	Health surveillance role	Health supervision of worker Assessment of the nature and degree of exposure Undertaking general health surveillance Specific health surveillance
		Health screening role	Health screening for specific disease and disorders
Care	Curative care	Care provider (treatment)	Provision of a routine treatment service
	Emergency service	Emergency care	Emergency treatment for injuries and illness
	Restoration of health	Rehabilitator	Rehabilitation and resettlement
Management	Management	Manager	Policy decision-making Budge planning OH programmes development Disaster planning
	Communication	Communicator	Meeting and communications Co-operation with outside agencies
	Administration	Administrator	Record keeping Development and maintenance of records
Research	Research	Researcher	Epidemiological studies

FACTORS AFFECTING OCCUPATIONAL HEALTH NURSING PRACTICE

Workplace Observation List

Name _____

Job Title _____

Workplace _____

Address _____

_____

_____

_____

Telephone _____

Date _____

1. **Policy**

Occupational nursing program

[ ] _____

_____

2. **Personnel**

1) Job title _____

2) Basic training _____

_____

3) Continuing education _____

_____

_____

4) Special training _____

_____

3. **Facilities**

1) Nurse office [ ] _____

2) Physician office [ ] _____

3) Waiting room [ ] _____

4) X-ray room [ ] _____

5) Laboratory room [ ] _____

6) Chart room [ ] _____

7) Treatment room [ ] _____

8) Emergency room [ ] _____

9) ECG room [ ] _____

10) Hearing test room [ ] _____

11) Physical therapy room [ ] _____

12) Storage room [ ] _____

13) Change clothes room [ ] _____

14) Others [ ] _____

4. Instrument

1) X-ray radiography [ ] _____
2) Audiometry [ ] _____
3) Vision test [ ] _____
4) Spirometry [ ] _____
5) Blood chemistry [ ] _____
6) Refrigerator [ ] _____
7) Physical therapy [ ] _____
8) Others [ ] _____

5. Health Education/Health Promotion

Title	Subject	Method

6. Nursing Practice

[ ] _____

7. Nursing Procedure

[ ] _____

8. Nursing Plan

[ ] _____

9. Nursing Records/Notes

[ ] _____

10. Emergency Plan

[ ] _____

[Nursing Practice]

Time	Activities	Role	Function	Note

[Nursing Practice]

Time	Activities	Role	Function	Note

FACTORS AFFECTING OCCUPATIONAL HEALTH NURSING PRACTICE

Key Person Questionnaire

Name _____

Job Title _____

Workplace _____

Address _____

_____

_____

_____

Telephone _____

Date _____

QUESTIONNAIRE

The purposes of this questionnaire is to explore your ideas and beliefs about occupational health nursing in order to provide a basis for a study of the work of occupational health nurses.

☞

1. What do you see as the key roles and functions of the occupational health nurse?

Please comment. _____

_____

_____

_____

_____

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2. What is your definition of occupational health nursing?

Please comment. _____

_____

_____

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_____

How would you define the term occupational health nurse?

Please comment. _____

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3. In which different settings do occupational health nurses function in this country?

Please comment. _____

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_____

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☞

4. Do you think the occupational health nursing is a specialty which differs from generic nursing?

   NO _____

   YES_____ If yes, what elements contribute to this difference?

   Please comment. _____

   _____

   _____

   _____

   _____

☞

5. What characteristics do you believe the effective occupational health nurse possesses?

   Please comment. _____

   _____

   _____

   _____

   _____

☞

6. What relationship if any exists between community health nursing and occupational health nursing?

   Please comment. _____

   _____

   _____

   _____

   _____

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7. What do you feel is unique about the field of occupational health nursing?

   Please comment. _____

   _____

   _____

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   _____

☞

8. Do you think occupational health nursing needs a model to guide its practice?

NO _____

YES_____ If yes, why?

Please comment. _____

_____

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_____

_____

What type of model, if any, you feel is most appropriate? And why?

Please comment. _____

_____

_____

_____

_____

☞

9. In your opinion is occupational health nursing changing at present?

NO _____

YES_____ If yes, in what way is it changing?

Please comment. _____

_____

_____

_____

_____

What do you feel are the factors which are currently influencing these changes?

Please comment. _____

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_____

☞

10. What kind of basic educational preparation do you feel occupational health nurses need?

Please comment. _____

_____

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_____

☞

11. How important do you think continuing education is for occupational health nurses?

Please comment. _____

_____

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_____

What areas do you feel are most important?

Please comment. _____

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_____

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12. Do you consider special training in occupational health nursing necessary for practice?

NO _____

YES_____ If yes, please to write the specific topic.

Please comment. _____

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13. What do you feel are the main issues and problems that occupational health nursing is facing at present?

Please comment. _____

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14. What do you believe the future holds for occupational health nursing?

Please comment. _____

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15. If you know any association or society of occupational health nursing in your country, write details below giving the chairman's name and address if possible.

_____

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16. If you know any relevant person that would be helpful to us or interested in our research, please write their names and addresses below.

_____

_____

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17. If you have any useful references, articles or books that you think would be beneficial to us, please write their titles, authors and publishers below.

_____

_____

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18. Is there anything else you would like to add about the topics in this questionnaire or about occupational health nursing that you think we haven't covered?

Please comment. _____

_____

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_____

Thank you very much for completing the questionnaire and for helping us with this research. If you feel able to share further information with us, we would greatly appreciate details of any work you may have published and a brief curriculum vitae which would enhance our understanding of your career development in occupational health nursing.

Pei-Jen Chang

Professor Jill Macleod Clark

ADDITIONAL QUESTIONS FOR MANAGERS

If you are an occupational health manager in the workplace, please continue the following questions.

☞

1. What key roles and functions do you play in your workplace?

   Please comment. _____

   _____

   _____

   _____

   _____

☞

2. What routine activities do you undertake at least once a week?

   Please comment. _____

   _____

   _____

   _____

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   _____

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   _____

   _____

☞

3. What problems and/or barriers, if any, do you feel affect the way you are able to carry out your role?

   Please comment. _____

   _____

   _____

   _____

   _____

☞

4. Within your occupational health team, with which team members do you have the most contact?

Please comment. _____

_____

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☞

5. How would you describe the relationship between yourself and the person(s) you have identified above.

Please comment. _____

_____

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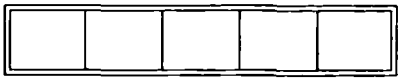
■

FACTORS AFFECTING OCCUPATIONAL HEALTH NURSING PRACTICE

Survey Questionnaire



Department of Nursing Studies
King's College
University of London

General Information:

Factors Affecting Occupational Health Nursing Practice

The purpose of this questionnaire is to identify the main factors that affect and influence the practice of occupational health nursing in the United Kingdom and other countries. It is divided into four sections.

Section A: **Exploring your views and ideas about occupational health nursing**
Section B: **Addressing the main factors affecting occupational health nursing practice**
Section C: **Questions related to your professional development**
Section D: **Details about yourself and your role**

Please try to answer all the questions following the instructions given. Most of the questions ask you to tick a box(es) or to express your opinions in the box. There is space left after several questions for your other opinions. On the final page is a blank sheet. Please write any comments that you may have, either about your opinions of occupational health nursing or the questionnaire. Any information given will be treated as strictly confidential and anonymity will be preserved at all times.

Section A:

Exploring Your Views and Ideas About Occupational Health Nursing

Q1a. Which of the following roles do you consider to be most important in occupational health nursing? Indicate your choice of the **FIVE** most important roles by ticking the appropriate box(es). Your response in Column A should represent your view of the ideal role of an occupational health nurse and your response in Column B should represent your view in the context of your real-life or actual role.

Roles of the Occupational Health Nurse	Column A Ideal Role	Column B Actual Role
1. Therapeutic role		
2. Emergency responsibility role		
3. Health surveillance role		
4. Health screening role		
5. Environmental surveillance role		
6. Consultant role		
7. Education role		
8. Training role		
9. Management role		
10. Research role		

Q1b. What other roles, not mentioned above, do you feel are important in occupational health nursing? Please write below.

Q2a. Which of the following functions do you consider to be most important in occupational health nursing? Indicate your choice of the **TEN** most important functions by ticking the appropriate box(es). Your response in Column A should represent your view of the ideal function of an occupational health nurse and your response in Column B should represent your view in the context of your real-life or actual function.

Functions of the Occupational Health Nurse	Column A Ideal Function	Column B Actual Function
Surveillance of the Worker's Health		
1. Health supervision of workers		
2. Assessment of the nature and degree of exposure		
3. Undertaking general health surveillance		
4. Specific health surveillance		
5. Record keeping		
Health Promotion at Work		
6. Health screening		
7. Health education and promotion		
8. Rehabilitation and resettlement		
9. Immunisation		
Management of Illness and Injury at Work		
10. Emergency treatment for accident and illness		
11. Provision of a routine treatment service		
Environment Monitoring and Assessment		
12. Familiarisation with the work environment		
13. Informing workers of health hazards		
14. Occupational safety		
Counselling		
15. Individual counselling		
16. Assisting workers with socio-psychological problems		
Education/Training		
17. First-aid training for workers		
Administration		
18. Development and maintenance of records		
19. Meetings and communication		
20. Co-operation with outside agencies		

Q2b. What other functions, not mentioned above, do you feel are important in occupational health nursing? Please write below.

Q3. What is your definition of occupational health nursing? Please read through the following list and tick **ONE** box that most appropriately fits your definition.

Definition of Occupational Health Nursing	Tick
1. The application of nursing principles conserving the health of workers in all occupations. It involves prevention, recognition, and treatment of illness and injury and requires special skills and knowledge in the fields of health education and counselling, environmental health, rehabilitation, and human relations.	
2. The speciality that applies professional nursing principles in developing and carrying out a nursing service tailored to the changing environment of the specific company as well the needs of its employees.	
3. Contributing to the promotion of a high degree of physical and mental health and well-being of people at work, assisting with the prevention of illness and injury due to the work undertaken or the working environment, and providing immediate treatment for illness or injury arising at work.	
4. The application of nursing practice and public health procedures for the purpose of conserving, promoting and restoring the health of individuals and groups through their places of employment.	
5. If none of the above is appropriate, please write an alternative definition below.	

Q4. How would you define the occupational health nurse? Please read through the following list and tick **ONE** box that most appropriately fits your definition.

Definition of Occupational Health Nurse	Tick
1. The occupational health nurse perceives the worker as a total individual, treats his or her response to potential and/or existing adverse conditions, and considers the implications that this response may have on the individual's family, social, cultural and economic life.	
2. A registered professional nurse employed by business, industry, or an organisation for the purpose of conserving, protecting, or restoring the health of workers.	
3. A registered nurse who gives nursing service under general medical direction to ill or injured employees or other persons who become ill or suffer an accident on the premises of a factory or other establishment. Duties involve a combination of the following: giving first-aid to the ill or injured, attending to subsequent dressings of employees' injuries, keeping records of patients treated; preparing accident reports for compensation or evaluations of applicants and employees; and planning and carrying out programs involving health education, accident prevention, evaluation of plant environment, or other activities affecting the health, welfare, and safety of all personnel.	
4. If none of the above is appropriate, please write an alternative definition below.	

Q5a. Do you think that occupational health nursing is a specialty which differs from generic nursing. Please tick box 'YES' or 'NO'.

YES	NO

Q5b. If **YES**, what elements contribute to this difference? Please tick the appropriate box(es).

Elements	Tick
1. Working with healthy people	
2. Preventing diseases and injuries	
3. Working in the employees' workplace	
4. It is a preventative, health promoting specialty	
5. Relative isolation from the main stream of nursing and other health professionals	
6. Not within the scope of nursing as it is usually understood by the public	
7. Part of a more multi-disciplinary team, e.g. production, safety	

Q5c. In what other ways do you feel that occupational health nursing differs from generic nursing? Please write below.

Q6. Which of the following characteristics do you believe the effective occupational health nurse should possess? Indicate your choice of the **FIVE** most important characteristics by ticking the appropriate box(es).

Characteristics	Tick
1. Efficiency	
2. Good communication skills	
3. A sense of humour	
4. Inquisitiveness and inventiveness	
5. Independence	
6. Maturity	
7. Intelligence	
8. Empathy	
9. Well developed, effective inter-personal skills	
10. An enquiring and challenging mind	
11. Taking on problems and solving them	
12. Good management skills	
13. Good basic nursing skills	
14. Good skills in written and oral presentation	
15. Other characteristics. Please specify.	

Q7. What relationship, if any, exists between your role as an occupational health nurse and that of your colleagues in the community? Please comment below.

Q8a. Which of the following do you feel are unique qualities of occupational health nursing? Indicate your choice of the **FIVE** most important unique qualities by ticking the appropriate box(es).

Unique Qualities of Occupational Health Nursing	Tick
1. Preventing ill health and injury in the workplace	
2. Possessing a wide and varied knowledge base	
3. Providing health care in an environment dedicated to production and profit	
4. Having the opportunity to establish a long term relationship with a population and providing continuity of care	
5. Having the ability to directly influence decision makers	
6. Involving a diversity of problems and challenges	
7. Improving working conditions	
8. Providing health surveillance and maintenance of health	
9. Promoting health in the workplace and community	

Q8b. What other qualities of occupational health nursing, not mentioned above, contribute to its uniqueness? Please write below.

Section B:

Addressing the Main Factors Affecting Occupational Health Nursing Practice

Q9a. Do you think occupational health nursing needs a model to guide its practice. Please tick box 'YES' or 'NO'.

YES	NO

Q9b. If **YES**, please give your reason below.

Q10. Which of the following models do you feel is the most appropriate? Please tick **ONE** box only.

Model of Occupational Health Nursing	Tick
1. Hanasaari model	
2. Wilkinson windmill model	
3. Dees's model	
4 Morris's model	
5 Orem's model	
6. Other models. Please specify.	

Q11. If you ticked one of the above models, please give the reasons for your choice below.

Q12a. In your opinion, is occupational health nursing changing at present? Please tick box 'YES' or 'NO'.

YES	NO

Q12b. If **YES**, in what way is it changing? Indicate your choice of the **THREE** most important changes by ticking the appropriate box(es).

Source of Change	Tick
1. Changes in occupational health nursing education	
2. Increasing roles	
3. Development as a specialty	
4. Economic/Financial change	
5. Political/Social change	
6. The trend toward prevention and early detection instead of treatment of injury and primary care	
7. Changes in consumers understanding and requirement of occupational health nursing	

Q12c. In what other ways is occupational health nursing changing at present? Please write below.

Q13a. Which of the following do you feel are factors that are currently influencing these changes? Indicate your choice of the **TEN** most important influencing factors by ticking the appropriate box(es).

Influencing Factors	Tick
1. Economic/Financial situation	
2. EEC/UK legislation	
3. Working processes/Technology changes	
4. Politics/Social policy	
5. Better awareness of health and environment	
6. Occupational health nursing education/certification	
7. Computerization	
8. Ecological change	
9. Developments in industry	
10. Cost effectiveness of disease prevention and early detection	
11. Cost-benefit analyses	
12. Interdisciplinary competition	
13. Developing roles of other nursing practitioners	
14. Health care delivery system	

Q13b. What other factors, if any, do you feel are currently influencing change in occupational health nursing? Please write below.

Q14. Which of the following types of education and preparation do you feel occupational health nurses need? Indicate your choice of the **FIVE** most relevant areas by ticking the appropriate box(es).

Education and Preparation	Tick
1. A good general education, e.g. Biology, Chemistry, Physics	
2. A RGN qualification with 2 or 3 years post-registration work on the wards and community	
3. General nurse training and education and post-registration occupational health nurse course	
4. Good basic training	
5. Knowledge of the community	
6. Introduction to occupational health by modules	
7. Natural, behaviourial and social sciences	
8. Interaction skills	
9. Management skills	
10. Health promotion knowledge and skills	
11. Curative and rehabilitative nursing skills	
12. Diploma in nursing	
13. Diploma or certificate in occupational health nursing	
14. Bachelor of science/Other degree	
15. Other education and preparation. Please specify.	

Q15. How important do you think continuing education is for occupational health nurses? Please tick **ONE** box only.

Item	Tick
1. Not important	
2. Of little importance	
3. Of some importance	
4. Most important	

Q16. Which of the following continuing education areas do you feel are most important? Indicate your choice of the **TWENTY** most important subjects by ticking the appropriate box(es).

Continuing Education Areas	Tick	Continuing Education Areas	Tick
Occupational Health and Safety		**Health Promotion**	
1. Toxicology		27. General health education	
2. Occupational disease		28. Prevention for stroke and heart disease	
3. Ergonomics			
4. Environmental monitoring		29. Immunisation	
5. Noise		30. Smoking cessation	
6. Dust		31. Family planning	
7. Heat and cold		32. Health at work	
8. Radiation		33. Rehabilitation	
9. Vibration		34. Lifting and back care	
10. Asbestos		35. Hearing conservation	
11. Accident prevention		36. Healthy eating	
12. Safety administration		37. Healthy life styles	
13. Fire safety		38. Stress reduction	
14. Micro-electronics		39. The well woman	
Clinical Knowledge/Skills		**Screening/Health Assessment**	
15. Accident and emergency		40. Audiometry	
16. Injuries/trauma		41. Vision Test	
17. Hepatitis B infection		42. Spirometry/Lung function	
18. Ophthalmology/eye care		43. Electrocardiography	
19. Plastic surgery		44. Cervical screening	
20. Dermatology		45. General health assessment	
21. Neurology		**Social Concerns/Problems**	
22. Burns		46. Alcohol and drug abuse	
23. A.I.D.S.		47. Solvent abuse	
Personal Development		48. Youth work	
24. Further and higher education		49. Family therapy	
25. Influencing skills		50. Health of the population	
26. Public speaking		51. Social policy and services	

Managerial/administration		79. Staff reporting	
52. Management		**Professional Philosophy**	
53. Administration		80. Ethics	
54. Budget planning		81. Advanced nursing practice	
55. Time management		82. Extended role of the nurse	
56. Use of computer		83. Professional indemnity	
57. Report writing		84. Confidentiality	
58. Team work		85. The law and the nurse	
59. Disaster planning		86. The work of other health professionals	
Communication/Interpersonal Skills			
60. Counselling		87. UKCC and National Boards	
61. Writing skills		88. Project 2000	
62. Record keeping		**Research Related**	
63. Presentation skills		89. Epidemiology	
64. Listening skills		90. Research methodology	
65. Effective speaking		91. Statistics	
66. Committee work		92. Data collection	
Teaching		93. Sources of information	
67. Higher teaching certification		**Business Skills**	
68. Teaching management		94. Salesman skills	
69. Techniques in teaching		95. Accountancy	
70. First-aid instruction		96. Cost-benefit analysis	
Legislation		**Other Continuing Education Areas**	
71. Health and Safety Law		97. Please specify.	
72. EEC Legislation			
73. COSHH			
Managerial/Personnel			
74. Industrial relations			
75. Absence and ill health			
76. Health and dismissal			
77. Recruitment interviewing			
78. Staff development			

Q17a. Which of the following special training areas in occupational health nursing do you feel are necessary for practice? Indicate your choice of the **FIVE** most important areas by ticking the appropriate box(es).

Special Training Areas	Tick
1. New technology	
2. Chemical processes	
3. The work environment	
4. Toxicology	
5. Occupational medicine	
6. Occupational hygiene	
7. Ergonomics	
8. Social skills	
9. Technical health screening skills	
10. Health surveillance for specific exposures	

Q17b. What other special training areas, not mentioned above, do you feel are necessary for practice? Please write below.

Q18a. Which of the following main issues and problems is occupational health nursing facing at present? Indicate your choice of the **THREE** most important by ticking the appropriate box(es).

Main Issues and Problems	Tick
1. Economic recession causing cutbacks in staff and training	
2. Lack of knowledge of what occupational health nursing can provide in protecting the health and safety of workers	
3 Lack of understanding of roles by colleagues and managers	
4 Lack of legislation supporting the promotion of occupational health in the workplace	
5. Lack of team work and lack of acceptance of each other's abilities	
6. Lack of recognized qualifications	
7. Lack of understanding of our professional and unique role in the multidisciplinary team from managers and others	
8 Poor communication	

Q18b. What other issues and problems do you feel occupational health nursing is facing at present? Please write below.

Q19a. What do you believe the future holds for occupational health nursing? Please read through the following list and tick the **ONE** box that most appropriately describes your feeling.

Your Feeling	Tick
1. A constant challenge	
2. A need to be realistic - the world of the occupational health nurse is far from safe and secure	
3. A recognition that occupational health nurses are good value and an increased use of their skills in industry and commerce	
4. An increase in the standard of preparation and training received by occupational health nurses	
5. A positive and successful future	

Q19b. What else do you feel the future holds for occupational health nursing? Please write below.

Section C:
Questions Related to Your Professional Development

Q20. Please indicate which of the following **STATUTORY** qualifications you possess and also say how many years it is since you gained the qualification. Please give the number(s) of years in the box.

Statutory Qualification	Qualification Possessed	Years Since Gained
1. Registered General Nurse (SRN/RGN)		
2. Enrolled nurse (SEN)		
3. Registered Mental Nurse (RMN)		
4. Enrolled Mental Nurse (SEN, EMN)		
5. Registered Nurse Mental Handicap (RNMS/RNMD)		
6. Enrolled Nurse Mental Handicap (SEN(MS))		
7. Registered Sick Children Nurse (RSCN)		
8. Registered Fever Nurse (RFN)		
9. Registered Midwife (SCM)		
10. Registered Health Visitor (HV)		
11. Other statutory qualifications. Please specify.		

Q21a. Do you have any other professional and academic nursing qualifications? Please tick box 'YES' or 'NO'.

YES	NO

Q21b. If YES, please indicate other professional and academic nursing qualifications you hold and indicate how many years it is since you obtained the qualification.

Professional Nursing Qualification	Qualification	Years Since Gained
1. Nurse Tutor		
2. District Nurse		
3. Occupational Health Nursing Certificate		
4. Diploma in Nursing		
5. Diploma in Occupational Health Nursing		
6. Higher National Certificate		
7. Bachelor Degree in Nursing		
8. Master Degree in Nursing		
9. Other qualifications. Please specify.		

Q22a. Have you attended other **SHORT** professional nursing courses, either on a day release or block release basis, which are assessed but do not necessarily lead to a formal qualification? Please tick box 'YES' or 'NO'.

YES	NO

Q22b. If **YES**, please indicate if you have attended such a course by giving the course name and the number of years since attended.

Professional Nursing Course Name	Course Length in Days	Years Since Attended
1.		
2.		
3.		
4.		
5.		
6.		

Q23a. Are you undertaking a course at present? Please tick box 'YES' or 'NO'.

YES	NO

Q23b. If **YES**, please specify the course name and its attendance pattern and tick **ONE** box only.

Course Name	
Attendance Pattern	**Tick**
1. Full time	
2. One day per week	
3. Two days per week	
4. Evening course	
5. Other pattern. Please specify.	

Q24a. Would you be interested in obtaining any further academical professional qualifications? Please tick box 'YES' or 'NO'.

YES	NO

Q24b. If **YES**, which ones would you like to obtain? Please write below.

1.
2.
3.

Q25a. Did you have any nursing experience (excluding training) in a hospital before your first occupational health nursing position. Please tick box 'YES' or 'NO'.

YES	NO

Q25b. If YES, please indicate each type of department you worked in by ticking the appropriate box(es) and show how many months you spent in each area.

Department of Hospital	Tick	Months
1. Medicine		
2. Surgery		
3. Gynaecology		
4. Obstetrics		
5. Ophthalmology		
6. Intensive Care		
7. Operating Theatre		
8. Accident & Emergency		
9. Neuro-surgery		
10. Neurology		
11. Orthopaedics		
12. Dermatology		
13. Paediatrics		
14. Oncology		
15. Geriatrics		
16. Psychiatry		
17. Mental Handicap		
18. Out-patients Department		
19. Communicable Disease		
20. Ear, Nose & Throat		
21. Other departments. Please specify.		

Q26a. Did you have any nursing practice (excluding training) in the community before taking up your first occupational health nursing position. Please tick box 'YES' or 'NO'.

YES	NO

Q26b. If YES, please indicate which areas of nursing practice you worked in by ticking the appropriate box(es) and indicate how many months you spent in each area.

Nursing Practice in the Community	Tick	Months
1. Midwifery		
2. District Nursing		
3. Health Visiting		
4. School Nursing		
5. Community Psychiatric Nursing		
6. Other practice areas. Please specify.		

Q27. How many years have you worked in occupational health nursing? Please put the number of years in the box.

Number of years

Q28. Which of the following types of industry have you had experience of working in during your occupational health nursing career? Please tick the relevant box(es).

Type of Industry	Previous Employ-ment	Present Employ-ment
1. Food		
2. Drink and tobacco		
3. Textile		
4. Clothing and footwear		
5. Leather and its goods		

Type of Industry	Previous Employ-ment	Present Employ-ment
6. Non-metal furniture		
7. Paper printing and publishing		
8. Chemical materials		
9. Chemical products		
10. Coal and petroleum products		
11. Rubber products		
12. Plastics products		
13. Non-metal mineral products		
14. Metal manufacture		
15. Metal products		
16. Mechanical engineering		
17. Electrical engineering		
18. Vehicles		
19. Instrumental engineering		
20. Other manufacturing industry		
21. Agriculture and fishing		
22. Mines and quarrier		
23. Construction		
24. Commerce		
25. Water, electricity and gas		
26. Banking and insurance		
27. Transport and post		
28. Public, social and individual service		
29. Other types of industry, Please specify.		

Q29. What grade is your present position in occupational health nursing? Please tick ONE box only.

Your Present Position	Tick
1. Chief Nurse	
2. Principal Nurse	
3. Senior Nurse	
4. Staff Nurse	
5. Senior Enrolled Nurse in Charge	
6. Senior Enrolled Nurse	
7. Enrolled Nurse	
8. Other grade. Please specify.	

Q30. How many years have you been in your present position. Please put the number of years in the box.

Number of years

Q31. How many hours do you work per week at present? Please put the number of hours in the box.

Number of hours

Q32. What pattern of duty do you work in your present post? Please tick **ONE** box only.

Your Duty Pattern	Tick
1. Days only	
2. Nights	
3. Shifts	
4. Regular weekends	
5. Occasional weekends	
6. Other duties. Please specify.	

Q33a. Which of the following most closely describes your reasons for choosing a job in occupational health nursing? Indicate your choice of the **THREE** most important reasons by ticking the appropriate box(es).

Reasons for Choice	Tick
1. To ensure day time work only with no shift work necessary	
2. To earn money for essentials, e.g. food, rent or mortgage	
3. Higher salary and more annual leave entitlement	
4. To develop a professional career	
5. Independent work	
6. To care for healthy people	
7. More challenge	
8. No other job available	

Q33b. For what other reasons, if any, did you choose a job in occupational health nursing? Please write below.

Q34a. Which of the following most closely describes your reasons for continuing your present job? Indicate your choice of the **THREE** most important reasons by ticking the appropriate box(es).

Reasons for Continuing Present Job	Tick
1. Fixed work pattern with no shift work necessary	
2. To earn money for essentials, e.g., food, rent or mortgage	
3. High salary and more annual leave entitlement	
4. To develop a professional career	
5. Independent work	
6. To care for healthy people	
7. Good relationships with medical officers	
8. Very important position in the organisation	
9. Enjoyment of work	
10. Continuing challenge	
11. Other reasons. Please specify.	

Q34b. Where do you see yourself professionally in the next five and ten years? Please write below.

Five Years	Ten Years

Q35. The table below lists various aspects of job satisfaction. Please rate your satisfaction with **EACH** by ticking the appropriate boxes. If not applicable to your situation, please tick the last box.

A: Very satisfied
B: Fairly satisfied
C: Fairly dissatisfied
D: Very dissatisfied

Aspect of Job Satisfaction	A	B	C	D	Not Applicable
Hours					
1. The starting and finishing time of shifts					
2. Work hours per week					
Facilities for Direct Care					
3. Availability of supplies/equipment					
Relationship					
4. Relationship with your department manager					
5. Relationship with other team members					
6. Relationship with trade unions					
7. Relationship with outside agencies					
Professional Development					
8. Opportunities for continuing education					
9. Information about developing a career					
10. Feedback on your work from managers					
11. Feedback on your work from workers					
12. Feedback on your work from team members					
Roles and Functions					
13. Your roles and functions within the department					
14. Your roles and functions within the organisation					
Welfare					
15. Your salary					
16. Your annual leave entitlement					
17. Canteen facilities					
18. Recreational facilities					

Section D:
Details About Yourself and Your Role

Q36. What sex are you? Please tick appropriate box.

Male	Female

Q37. How old are you? Please tick appropriate box.

Age Group	Tick
1. Less than 25	
2. 25 - 34	
3. 35 - 44	
4. 45 - 54	
5. 55 - 65	
6. More than 65	

Q38. What is your marital status? Please tick appropriate box.

Marital Status	Tick
1. Married	
2. Stable partnership	
3. Single	
4. Widowed/Divorced	
5. Separated	

Q39. How much is your salary per year? Please tick appropriate box.

Your Salary	Tick
1. Less than £ 10,000	
2. £ 10,000 - £ 12,999	
3. £ 13,000 - £ 15,999	
4. £ 16,000 - £ 19,999	
5. £ 20,000 or more	

Q40. How many staff are there in your Occupational Health Department? Please put the number of staff in the relevant column.

Staff (including yourself)	Full-time	Part-time	Total Number
1. Nurses			
2. Doctors			
3. First-aiders			
4. Industrial Hygienists			
5. Safety Engineers			
6. Secretaries			
7. Managers			
8. Other staff. Please specify.			
Total Number			

Q41. Which of the following words best describes professional relationships within your department? Please tick ONE box only.

Professional Relationship	Tick
1. Cooperative	
2. Professional	
3. Organised	
4. Reasonable	
5. Business like	
6. Patchy	
7. Uncooperative	
8. Unprofessional	
9. Disorganised	
10. Other descriptions. Please specify.	

Q42. What importance do you feel is attached to your department by the organisation? Please tick ONE box only.

Perceived Importance	Tick
1. Totally essential	
2. Essential but not the highest priority	
3. Low priority and not very essential	
4. Not essential	
5. Other. Please specify.	

Q43. Approximately how many employees is your occupational health department responsible for? Please put the number of employees in the boxes.

Male Employees	Female Employees	Total Number

Q44a. What problems and/or barriers, if any, do you feel affect the way you are able to carry out your role? Please read through the following list and tick the **ONE** box only that most appropriately describes your feeling.

Problems and/or Barriers	Tick
1. Time constraints	
2. Lack of understanding of occupational health in general	
3. Misunderstanding by employees	
4. Misunderstanding by employers	

Q44b. What other problems and barriers affect the way you are able to carry out your role? Please write below.

Q45. Within your occupational health team, with which members do you have the most contact? Indicate your choice of the **THREE** most important persons by ticking the appropriate box(es), and describe the relationship between yourself and the persons.

Contact Members	Tick	Relationship			
		Coopera-tive	Profes-sional	Business-like	Poor
1. Medical officers					
2. Nursing colleagues					
3. Medical centre attendants					
4. Industrial hygienists					
5. Safety officers					
6. Managers					
7. Other members. Please specify.					

Q46a. Do you have an occupational health policy in your organisation? Please tick box 'YES' or 'NO'.

YES	NO

Q46b. If **YES**, what components are included in the occupational health policy for your organisation? Please tick appropriate box(es).

Components of Policy for Occupational Health Programs	Tick
1. Philosophy/Mission statement	
2. Organisational chart/Company description	
3. Goals and specific measurable objectives	
4. Scope of health services organisation, staffing, and program	
5. Job descriptions	
6. Personnel policies	
7. Interrelationships with community (referral resources, consultants)	
8. Protocols appropriate to cover emergency situations	
9. Administration procedures (health services records, reports, confidentiality and accountability)	
10. Ethical/legal aspects of practice	
11. Health and environment relationships	
12. Other components. Please specify.	

Q47. What equipment and facilities are there in your department? Please tick appropriate box(es).

Equipment and Facilities	Tick
1. Waiting room	
2. Office(s) for doctor(s)	
3. Office(s) for nurse(s)	
4 Equipment and facilities for vision test	
5. Equipment and facilities for audiometric test	
6. Equipment and facilities for stress test	
7. Equipment and facilities for X-ray radiography	
8. Separate treatment room(s)	
9. Rest area with bed	
10. Private area for health education (counselling and interviewing, individual or group)	
11. Conference area	
12. Library space (current references, journals, literature for the professional nurse and consumer)	
13. Storage room	
14. Physiotherapy room	
15. Laboratory room	
16. Staff changing room	
17. Toilet/Shower	
16. Other equipment and facilities. Please specify.	

Q48a. Is there a policy for nurses employed in your organisation? Please tick box 'YES' or 'NO'.

YES	NO

Q48b. If YES, which of the following components are included in the policies for nurses employed in your organisation? Please tick the appropriate box(es).

Components of Policies	Tick
1. Written professional and para-professional staff requirements including functions, credentials and skills	
2. Clearly delineated staffing patterns	
3. Written job descriptions for each level of staff	
4. Written policies regarding staff meetings, staff and professional development opportunities, access to and use of consultants, and mechanisms for personal evaluations	
5. Budgets for the nursing component as well as the overall occupational health program	
6. Other components. Please specify.	

Q49a. Which of the following activities do you feel are most important in your job? Indicate your choice of the **TEN** most important activities by ticking the appropriate box(es).

Occupational Health Nursing Activities	Tick
Health Promotion Program	
1. Health screening (Vision, Audiometric, Lung function, Stress test)	
2. Risk reduction	
3. Counselling	
4. Health education	
5. Rehabilitation	
6. Treatment	
7. Written nursing procedure and protocols for practice	
Written Nursing Care Plans	
8. Nursing problems	
9. Nursing diagnoses	
10. Nursing activities for problem solving	
11. Method of evaluation	
Programs for Determining Health Status	
12. Physical examinations (Pre-employment, Job placement, Periodic)	
13. Health surveillance	
14. Epidemiology studies	
Establishing a Data Base	
15. Comprehensive health history including an occupational history	
16. Physical assessment	
17. Screening and baseline laboratory tests	
18. Identification of high risk employees	
19. Identification of environmental high risk areas	

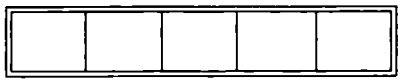
Q49b. What other activities, not previously mentioned, do you feel are most important in your job? Please write below.

□ Please use this space to write any comments that you may have, either related to your opinion of occupational health nursing or about the questionnaire.

THANK YOU VERY MUCH INDEED FOR COMPLETING THIS QUESTIONNAIRE.

FACTORS AFFECTING OCCUPATIONAL HEALTH NURSING PRACTICE

Final Stage Survey Questionnaire



Department of Nursing Studies

King's College

University of London

Factors Affecting Occupational Health Nursing Practice

The purpose of this questionnaire is to identify the main factors that affect and influence the practice of occupational health nursing in the United Kingdom and other countries.

Please try to answer all the questions following the instructions given. Most of the questions ask you to tick a box(es) or to give number(s) in the box. On the final page is a blank sheet. Please write any comments that you may have, either about your opinions of occupational health nursing or the questionnaire. Any information given will be treated as strictly confidential and anonymity will be preserved at all times.

Q1. Which of the following roles do you consider to be most important in occupational health nursing? Indicate your choice of the **FIVE** most important roles by ticking the appropriate box(es). Your response in Column A should represent your view of the ideal role of an occupational health nurse and your response in Column B should represent your view in the context of your real-life or actual role.

Roles of the Occupational Health Nurse	Column A Ideal Role	Column B Actual Role
1. Therapeutic role		
2. Emergency responsibility role		
3. Health surveillance role		
4. Health screening role		
5. Environmental surveillance role		
6. Consultant role		
7. Education role		
8. Training role		
9. Management role		
10. Research role		

Q2. Which of the following functions do you consider to be most important in occupational health nursing? Indicate your choice of the TEN most important functions by ticking the appropriate box(es). Your response in Column A should represent your view of the ideal function of an occupational health nurse and your response in Column B should represent your view in the context of your real-life or actual function.

Functions of the Occupational Health Nurse	Col. A Ideal Function	Col. B Actual Function
Surveillance of the Worker's Health		
1. Health supervision of workers		
2. Assessment of the nature and degree of exposure		
3. Undertaking general health surveillance		
4 Specific health surveillance		
5. Record keeping		
Health Promotion at Work		
6. Health screening		
7. Health education and promotion		
8. Rehabilitation and resettlement		
9 Immunisation		
Management of Illness and Injury at Work		
10. Emergency treatment for accident and illness		
11. Provision of a routine treatment service		
Environment Monitoring and Assessment		
12. Familiarisation with the work environment		
13 Informing workers of health hazards		
14. Occupational safety		
Counselling		
15. Individual counselling		
16. Assisting workers with socio-psychological problems		
Education/Training		
17. First-aid training for workers		
Administration		
18 Development and maintenance of records		
19. Meetings and communication		
20. Co-operation with outside agencies		

Q3. What is your definition of occupational health nursing? Please read through the following list and tick ONE box that most appropriately fits your definition.

Definition of Occupational Health Nursing	Tick
1. The application of nursing principles conserving the health of workers in all occupations. It involves prevention, recognition, and treatment of illness and injury and requires special skills and knowledge in the fields of health education and counselling, environmental health, rehabilitation, and human relations.	
2. The speciality that applies professional nursing principles in developing and carrying out a nursing service tailored to the changing environment of the specific company as well the needs of its employees.	
3. Contributing to the promotion of a high degree of physical and mental health and well-being of people at work, assisting with the prevention of illness and injury due to the work undertaken or the working environment, and providing immediate treatment for illness or injury arising at work.	
4. The application of nursing practice and public health procedures for the purpose of conserving, promoting and restoring the health of individuals and groups through their places of employment.	
5. If none of the above is appropriate, please write an alternative definition below.	

Q4. How would you define the occupational health nurse? Please read through the following list and tick ONE box that most appropriately fits your definition.

Definition of Occupational Health Nurse	Tick
1. The occupational health nurse perceives the worker as a total individual, treats his or her response to potential and/or existing adverse conditions, and considers the implications that this response may have on the individual's family, social, cultural and economic life.	
2. A registered professional nurse employed by business, industry, or an organisation for the purpose of conserving, protecting, or restoring the health of workers.	
3. A registered nurse who gives nursing service under general medical direction to ill or injured employees or other persons who become ill or suffer an accident on the premises of a factory or other establishment. Duties involve a combination of the following: giving first-aid to the ill or injured, attending to subsequent dressings of employees' injuries, keeping records of patients treated, preparing accident reports for compensation or evaluations of applicants and employees; and planning and carrying out programs involving health education, accident prevention, evaluation of plant environment, or other activities affecting the health, welfare, and safety of all personnel.	
4. If none of the above is appropriate, please write an alternative definition below.	

Q5a. Do you think that occupational health nursing is a specialty which differs from generic nursing. Please tick box 'YES' or 'NO'.

YES	NO

Q5b. If **YES**, what elements contribute to this difference? Please tick the appropriate box(es).

Elements	Tick
1. Working with healthy people	
2. Preventing diseases and injuries	
3. Working in the employees' workplace	
4. It is a preventative, health promoting specialty	
5. Relative isolation from the main stream of nursing and other health professionals	
6. Not within the scope of nursing as it is usually understood by the public	
7. Part of a more multi-disciplinary team, e.g. production, safety	

Q6a. In your opinion, is occupational health nursing changing at present? Please tick box 'YES' or 'NO'.

YES	NO

Q6b. If **YES**, in what way is it changing? Indicate your choice of the **THREE** most important changes by ticking the appropriate box(es).

Source of Change	Tick
1. Changes in occupational health nursing education	
2. Increasing roles	
3. Development as a specialty	
4. Economic/Financial change	
5. Political/Social change	
6. The trend toward prevention and early detection instead of treatment of injury and primary care	
7. Changes in consumers understanding and requirement of occupational health nursing	

Q7. Which of the following main issues and problems is occupational health nursing facing at present? Indicate your choice of the THREE most important by ticking the appropriate box(es).

Main Issues and Problems	Tick
1. Economic recession causing cutbacks in staff and training	
2. Lack of knowledge of what occupational health nursing can provide in protecting the health and safety of workers	
3. Lack of understanding of roles by colleagues and managers	
4. Lack of legislation supporting the promotion of occupational health in the workplace	
5. Lack of team work and lack of acceptance of each other's abilities	
6. Lack of recognized qualifications	
7. Lack of understanding of our professional and unique role in the multidisciplinary team from managers and others	
8. Poor communication	

Q8. What do you believe the future holds for occupational health nursing? Please read through the following list and tick the ONE box that most appropriately describes your feeling.

Your Feeling	Tick
1. A constant challenge	
2. A need to be realistic - the world of the occupational health nurse is far from safe and secure	
3. A recognition that occupational health nurses are good value and an increased use of their skills in industry and commerce	
4. An increase in the standard of preparation and training received by occupational health nurses	
5. A positive and successful future	

Q9. Please indicate which of the following **STATUTORY** qualifications you possess and also say how many years it is since you gained the qualification. Please give the number(s) of years in the box.

Statutory Qualification	Qualification Possessed	Years Since Gained
1. Registered General Nurse (SRN/RGN)		
2. Enrolled nurse (SEN)		
3. Registered Mental Nurse (RMN)		
4. Enrolled Mental Nurse (SEN, EMN)		
5. Registered Nurse Mental Handicap (RNMS/RNMD)		
6. Enrolled Nurse Mental Handicap (SEN(MS))		
7. Registered Sick Children Nurse (RSCN)		
8. Registered Fever Nurse (RFN)		
9. Registered Midwife (SCM)		
10. Registered Health Visitor (HV)		
11. Other statutory qualifications. Please specify.		

Q10a. Do you have any other professional and academic nursing qualifications? Please tick box 'YES' or 'NO'.

YES	NO

Q10b. If **YES**, please indicate other professional and academic nursing qualifications you hold and indicate how many years it is since you obtained the qualification.

Professional Nursing Qualification	Qualification	Years Since Gained
1. Nurse Tutor		
2. District Nurse		
3. Occupational Health Nursing Certificate		
4. Diploma in Nursing		
5. Diploma in Occupational Health Nursing		
6. Higher National Certificate		
7. Bachelor Degree in Nursing		
8. Master Degree in Nursing		
9. Other qualifications. Please specify.		

Q11a. Did you have any nursing experience (excluding training) in a hospital before your first occupational health nursing position. Please tick box 'YES' or 'NO'.

YES	NO

Q11b. If **YES**, please indicate each type of department you worked in by ticking the appropriate box(es) and show how many months you spent in each area.

Department of Hospital	Tick	Months
1. Medicine		
2. Surgery		
3. Gynaecology		
4. Obstetrics		
5. Ophthalmology		
6. Intensive Care		
7. Operating Theatre		
8. Accident & Emergency		
9. Neuro-surgery		
10. Neurology		
11. Orthopaedics		
12. Dermatology		
13. Paediatrics		
14. Oncology		
15. Geriatrics		
16. Psychiatry		
17. Mental Handicap		
18. Out-patients Department		
19. Communicable Disease		
20. Ear, Nose & Throat		
21. Other departments. Please specify.		

Q12a Did you have any nursing practice (excluding training) in the community before taking up your first occupational health nursing position. Please tick box 'YES' or 'NO'.

YES	NO

Q12b. If **YES**, please indicate which areas of nursing practice you worked in by ticking the appropriate box(es) and indicate how many months you spent in each area.

Nursing Practice in the Community	Tick	Months
1. Midwifery		
2. District Nursing		
3. Health Visiting		
4. School Nursing		
5. Community Psychiatric Nursing		
6. Other practice areas. Please specify.		

Q13. How many years have you worked in occupational health nursing? Please put the number of years in the box.

Number of years

Q14. Which of the following types of industry have you had experience of working in during your occupational health nursing career? Please tick the relevant box(es).

Type of Industry	Previous Employ -ment	Present Employ -ment
1. Food		
2. Drink and tobacco		
3. Textile		
4. Clothing and footwear		
5. Leather and its goods		
6. Non-metal furniture		
7. Paper printing and publishing		
8. Chemical materials		
9. Chemical products		
10. Coal and petroleum products		
11. Rubber products		
12. Plastics products		
13. Non-metal mineral products		
14. Metal manufacture		
15. Metal products		
16. Mechanical engineering		
17. Electrical engineering		
18. Vehicles		
19. Instrumental engineering		
20. Other manufacturing industry		
21. Agriculture and fishing		
22. Mines and quarrier		
23. Construction		
24. Commerce		
25. Water, electricity and gas		
26. Banking and insurance		
27. Transport and post		
28. Public, social and individual service		
29. Other types of industry, Please specify.		

Q15. What grade is your present position in occupational health nursing? Please tick **ONE** box only.

Your Present Position	Tick
1. Chief Nurse	
2. Principal Nurse	
3. Senior Nurse	
4. Staff Nurse	
5. Senior Enrolled Nurse in Charge	
6. Senior Enrolled Nurse	
7. Enrolled Nurse	
8. Other grade. Please specify.	

Q16. How many years have you been in your present position. Please put the number of years in the box.

Number of years

Q17. How many hours do you work per week at present? Please put the number of hours in the box.

Number of hours

Q18. What pattern of duty do you work in your present post? Please tick **ONE** box only.

Your Duty Pattern	Tick
1. Days only	
2. Nights	
3. Shifts	
4. Regular weekends	
5. Occasional weekends	
6. Other duties. Please specify.	

Q19. Which of the following most closely describes your reasons for choosing a job in occupational health nursing? Indicate your choice of the **THREE** most important reasons by ticking the appropriate box(es).

Reasons for Choice	Tick
1. To ensure day time work only with no shift work necessary	
2. To earn money for essentials, e.g. food, rent or mortgage	
3. Higher salary and more annual leave entitlement	
4. To develop a professional career	
5. Independent work	
6. To care for healthy people	
7. More challenge	
8. No other job available	
9. Other reason, please specify.	

Q20. Which of the following most closely describes your reasons for continuing your present job? Indicate your choice of the **THREE** most important reasons by ticking the appropriate box(es).

Reasons for Continuing Present Job	Tick
1. Fixed work pattern with no shift work necessary	
2. To earn money for essentials, e.g., food, rent or mortgage	
3. High salary and more annual leave entitlement	
4. To develop a professional career	
5. Independent work	
6. To care for healthy people	
7. Good relationships with medical officers	
8. Very important position in the organisation	
9. Enjoyment of work	
10. Continuing challenge	
11. Other reasons. Please specify.	

Q21. The table below lists various aspects of job satisfaction. Please rate your satisfaction with **EACH** by ticking the appropriate boxes. If not applicable to your situation, please tick the last box.

A: Very satisfied
B: Fairly satisfied
C: Fairly dissatisfied
D: Very dissatisfied

Aspect of Job Satisfaction	A	B	C	D	Not Applicable
Hours					
1. The starting and finishing time of shifts					
2. Work hours per week					
Facilities for Direct Care					
3. Availability of supplies/equipment					
Relationship					
4. Relationship with your department manager					
5. Relationship with other team members					
6. Relationship with trade unions					
7. Relationship with outside agencies					
Professional Development					
8. Opportunities for continuing education					
9. Information about developing a career					
10. Feedback on your work from managers					
11. Feedback on your work from workers					
12. Feedback on your work from team members					
Roles and Functions					
13. Your roles and functions within the department					
14. Your roles and functions within the organisation					
Welfare					
15. Your salary					
16. Your annual leave entitlement					
17. Canteen facilities					
18. Recreational facilities					

Q22. What sex are you? Please tick appropriate box.

Male	Female

Q23. How old are you? Please tick appropriate box.

Age Group	Tick
1. Less than 25	
2. 25 - 34	
3. 35 - 44	
4. 45 - 54	
5. 55 - 65	
6. More than 65	

Q24. What is your marital status? Please tick appropriate box.

Marital Status	Tick
1. Married	
2. Stable partnership	
3. Single	
4. Widowed/Divorced	
5. Separated	

Q25. How much is your salary per year? Please tick appropriate box.

Your Salary	Tick
1. Less than £ 10,000	
2. £ 10,000 - £ 12,999	
3. £ 13,000 - £ 15,999	
4. £ 16,000 - £ 19,999	
5. £ 20,000 or more	

Q26. Approximately how many employees is your occupational health department responsible for? Please put the number of employees in the boxes.

Male Employees	Female Employees	Total Number

Q27. Which of the following activities do you feel are most important in your job? Indicate your choice of the TEN most important activities by ticking the appropriate box(es).

Occupational Health Nursing Activities	Tick
Health Promotion Program	
1. Health screening (Vision, Audiometric, Lung function, Stress test)	
2. Risk reduction	
3. Counselling	
4. Health education	
5. Rehabilitation	
6. Treatment	
7. Written nursing procedure and protocols for practice	
Written Nursing Care Plans	
8. Nursing problems	
9. Nursing diagnoses	
10. Nursing activities for problem solving	
11. Method of evaluation	
Programs for Determining Health Status	
12. Physical examinations (Pre-employment, Job placement, Periodic)	
13. Health surveillance	
14. Epidemiology studies	
Establishing a Data Base	
15. Comprehensive health history including an occupational history	
16. Physical assessment	
17. Screening and baseline laboratory tests	
18. Identification of high risk employees	
19. Identification of environmental high risk areas	

☐ Please use this space to write any comments that you may have, either related to your opinion of occupational health nursing or about the questionnaire.

THANK YOU VERY MUCH INDEED FOR COMPLETING THIS QUESTIONNAIRE.

King's College London
UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES
Professor Jenifer Wilson-Barnett
PhD, SRN, FRCN
Head of Department

12 February 1991

Ref: ohn\wpdocs\letter\fxohnp1.let

{FIELD}2~
{FIELD}5~
{FIELD}6~

Dear {FIELD}1~ {FIELD}2~

I am currently studying for a PhD in the Nursing Studies Department at King's College, University of London under the supervision of Professor Jill Macleod Clark, and am enclosing my curriculum vitae. My aim is to try to identify the main factors which affect and influence the practice of occupational health nursing in the United Kingdom and other countries.

My reason for writing to you is to ask you if you would consider agreeing to participate in this study as we believe you are a key person in occupational health nursing in this country. Your participation in the research will involve taking part in a interview with me which I would like to tape-record. If you do feel able to take part, I would be most grateful if you can contact me by telephone (071 836 5454 ext 3029 or 071 872 3029 directline) or complete the reply slip and return it to me, in the enclosed SAE.

Any information given will be treated as strictly confidential and anonymity will be preserved at all time. A summary of the results of the research will be sent to each participant.

Thank you very much for your help. I look forward to hearing from you.

Yours sincerely

Pei-Jen Chang RN BSc MSc
Research Fellow

Enc

C1. Letter to the members of the SOHN-EC and the OHMF of the RCN

King's College London
UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES
Professor Jenifer Wilson-Barnett
PhD, SRN, FRCN
Head of Department

Reply Slip

It would be very helpful if we could meet in the next week or two, perhaps you could indicate below any days or times that may be convenient for you.

Name _____

Title _____

Address _____

_____

_____

_____

Day Time Telephone _____

Your Convenient Date _____

Your Convenient Time _____

Cornwall House Annex, Waterloo Road, London SE1 8TX. Telephone 071-836 5454. Facsimile 071-872 3219

C2. Letter to the members of the ICON-NC and the key persons in the US

King's College London
UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES
Professor Jenifer Wilson-Barnett
PhD, SRN, FRCN
Head of Department

14 March 1991

Ref: ohn\wpdocs\letter\fxohnp2.let

{FIELD}1~ {FIELD}2~
{FIELD}6~
{FIELD}7~

Dear {FIELD}1~ {FIELD}2~,

I am currently studying for a PhD in the Nursing Studies Department at King's College, University of London under the supervision of Professor Jill Macleod Clark, and am enclosing my curriculum vitae. My aim is to try to identify the main factors which affect and influence the practice of occupational health nursing in the United Kingdom and other countries.

My reason for writing to you is to ask you if you would consider agreeing to participate in this study as we believe you are a key person in occupational health nursing in your country. Your participation in the research will involve the completion of a postal questionnaire.

If you do feel able to participate I would be most grateful if you complete and return the enclosed questionnaire in the envelope provided by Wednesday 10 April 1991. Any information given will be treated as strictly confidential and anonymity will be preserved at all times. A summary of the results of the research will be sent to each participant.

If you have any queries about this project, please do get in touch. Thank you very much for your help. I look forward to hearing from you.

Yours sincerely,

Pei-Jen Chang RN BSc MSc
Research Fellow

Enc

Cornwall House Annex, Waterloo Road, London SE1 8TX. Telephone 071-836 5454. Facsimile 071-872 3219

King's College London
UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES
Professor Jenifer Wilson-Barnett
PhD, SRN, FRCN
Head of Department

2 April 1991

Ref: ohn\wpdocs\letter\fxohnp3.let

The Executive Director
American Association of Occupational Health Nurses
50 Lenox Pointe
Atlanta, Georgia 30324
United States

Dear Sir/Madam

I am currently studying for a PhD in the Nursing Studies Department at King's College, University of London under the supervision of Professor Jill Macleod Clark, and am enclosing my curriculum vitae.

My research aim is to try to identify the main factors which affect and influence the practice of occupational health nursing in the United Kingdom and other countries. In the first instance, I would like the opportunity to explore the ideas and beliefs about occupational health nursing held by key persons in the field. In 1989 I visited four companies in the U.S.A. (New England Telephone, Bethlehem Steel, Shell Oil, and Chevron Corporation). I am now anxious to further my understanding about the development and future of occupational health nursing in your country.

I am therefore writing this letter in order to identify the key persons in this field in the U.S.A. and would be most grateful if you could recommend key persons and send me details of their names, addresses, and workplaces at your earliest convenience. In the meantime, I would like, if it is possible, to join your association and become a member of AAOHN. If appropriate, perhaps you could send me the application forms and any other pertinent information.

Your kind assistance is greatly appreciated. I look forward to hearing from you

Yours sincerely

Pei-Jen Chang RN BSc MSc
Research Fellow

Enc

Cornwall House Annex, Waterloo Road, London SE1 8TX. Telephone 071-836 5454. Facsimile 071-872 3219

King's College London
UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES
Professor Jenifer Wilson-Barnett
PhD, SRN, FRCN
Head of Department

5 August 1991

Ref: ohn\wpdocs\letter\fxohnp9.let

{FIELD}1~ {FIELD}2~
{FIELD}6~

Dear {FIELD}1~ {FIELD}2~,

This letter is an attempt to improve the response rate of questionnaire. If you have already returned your questionnaire, please ignore this reminder and accept my apologies for any inconvenience I caused. If you have not returned your questionnaire, then I would be very grateful if you could complete the attached and return it in the enclosed envelope as soon as possible.

Thank you so much for giving up your time to talk with me about my study and for offering me the opportunity to explore ideas and beliefs about occupational health nursing with you. I feel I have gained a great deal of valuable information from you and hope you would feel happy to continue my dialogue in the future.

I look forward to hearing from you.

Yours sincerely,

Pei-Jen Chang RN BSc MSc
Research Fellow

Enc

Cornwall House Annex, Waterloo Road, London SE1 8TX. Telephone 071-836 5454. Facsimile 071-872 3219

C5. Reminder letter to the key persons in the other countries.

King's College London
UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES
Professor Jenifer Wilson-Barnett
PhD, SRN, FRCN
Head of Department

27 August 1991

Ref: ohn wpdocs\letter\fxohnp12.let

{FIELD}1~ {FIELD}3~ {FIELD}2~ ·
{FIELD}7~
{FIELD}8~
{FIELD}9~, {FIELD}10~ {FIELD}11~
{FIELD}12~

Dear {FIELD}1~ {FIELD}2~,

You may remember that I wrote to you in July about the research I am currently undertaking to identify the main factors which affect and influence the practice of occupational health nursing in the United Kingdom and other countries.

The original postal questionnaire was sent to you on 9 July 1991 and this letter is an attempt to improve the response rate of questionnaire. If you have already returned your questionnaire, please ignore this reminder and accept my apologies for any inconvenience I caused. If you have not returned your questionnaire, then I would be very grateful if you could complete the attached and return it as soon as possible.

I am enclosing a copy of my original letter to remind you of the details of this research. Your ideas and beliefs about occupational health nursing are very important for this study. Thank you very much for your help. I look forward to hearing from you.

Yours sincerely,

Pei-Jen Chang RN BSc MSc
Research Fellow

Enc

Cornwall House Annex, Waterloo Road, London SE1 8TX. Telephone 071-836 5454. Facsimile 071-872 3219

King's College London
UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES
Professor Jenifer Wilson-Barnett
PhD, SRN, FRCN
Head of Department

27 April 1991

Ref: ohn\wpdocs\letter\fxohnp6.let

{FIELD}1~ {FIELD}2~
{FIELD}6~

Dear {FIELD}1~ {FIELD}2~,

I am currently studying for a PhD in the Nursing Studies Department at King's College, University of London under the supervision of Professor Jill Macleod Clark.

I am undertaking a survey in order to identify the main factors which affect and influence the practice of occupational health nursing in the United Kingdom and other countries. I would like to include a representative sample of occupational health nurses in this survey, and am writing to seek your permission to use the namelist of your local group of the Society of Occupational Health Nursing. Any information given will of course be treated as strictly confidential and anonymity will be preserved at all times. A summary of the results of the research will be sent to you.

I enclose a copy of my curriculum vitae for your information and would be most grateful if you would be kind enough to send me the namelist and any other pertinent information at your earliest convenience. If you have any queries about this survey, please do not hesitate to contact me or my supervisor.

Thank you very much for your help. I look forward to hearing from you.

Yours sincerely,

Pei-Jen Chang RN BSc MSc
Research Fellow

Enc

Cornwall House Annex, Waterloo Road, London SE1 8TX. Telephone 071-836 5454. Facsimile 071-872 3219

C7. Reminder letter to the secretaries of the RCN-SOHN local groups

King's College London
UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES
Professor Jenifer Wilson-Barnett
PhD, SRN, FRCN
Head of Department

7 August 1991

Ref: ohn\wpdocs\letter\fxohnp11.let

{FIELD}1~ {FIELD}2~
{FIELD}6~

Dear {FIELD}1~ {FIELD}2~,

Further to my letter of 27 April I am writing to seek your permission to use the namelist of your local group of the Society of Occupational Health Nursing. If you have already sent your namelist, please ignore this reminder and accept my apologies for any inconvenience caused. If you have not sent your namelist, then I would be very grateful if you could send it as soon as possible. If you are no longer the chairman or secretary in your local group, perhaps you would kind enough to refer my letter to appropriate person in your group

I would like to recruit a representative sample of occupational health nurses in this survey. Your local group namelist is very important for this study. Enclosed is a copy of my original letter to remind you of the details of this survey.

Thank you very much for your help. I look forward to hearing from you.

Yours sincerely,

Pei-Jen Chang RN BSc MSc
Research Fellow

Enc

Cornwall House Annex, Waterloo Road, London SE1 8TX. Telephone 071-836 5454. Facsimile 071-872 3219

King's College London
UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES
Professor Jenifer Wilson-Barnett
PhD, SRN, FRCN
Head of Department

28 May 1991

Ref: ohn\wpdocs\letter\fxohnp7.let

Dear Colleague,

My name is Pei-Jen Chang. I was an Occupational Health Nurse and Lecturer in Taiwan for several years. Now I am currently studying for a PhD in Nursing Studies at King's College, University of London under the supervision of Professor Jill Macleod Clark. I am grateful to Mrs Marshall for giving me the opportunity to introduce myself to you.

I am undertaking a study which aims to identify the main factors which affect and influence the practice of occupational health nursing in the United Kingdom and other countries. During the first stage of the work, I interviewed 25 key persons in occupational health nursing and the observed nurses in practice in 11 companies.

I have been very fortunate in finding that everyone I met has been extremely kind and helpful and has given me a great deal of information. Now I am gradually gaining a clear picture of occupational health nursing in United Kingdom. I would like to say "Thank you very much" to all I have met.

For the next stage of the research, I am designing the occupational health nurse's questionnaire and this will form the main part of my study. However, I am finding it very difficult to get access to a representative group of occupational health nurses in the United Kingdom. If you have any suggestions about this or would wish to make any comments on my study, please do not hesitate to contact me. My address and telephone number are as follows:

Pei-Jen Chang
Department of Nursing Studies
Cornwall House Annex
Waterloo Road
London SE1 8TX (Telephone: 071-872 3029)

I look forward to hearing from you.

Yours sincerely,

Pei-Jen Chang RN BSc MSc
Research Fellow

C9. Letter for pretesting the survey questionnaire

King's College London
UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES
Professor Jenifer Wilson-Barnett
PhD, SRN, FRCN
Head of Department

6 September 1991

Ref: ohn\wpdocs\letter\fxohnp13.let

{FIELD}1~ {FIELD}3~ {FIELD}2~ '
{FIELD}7~
{FIELD}8~
{FIELD}9~ {FIELD}11~

Dear {FIELD}3~,

Thank you so much for giving up your time to talk with me about my study and for offering me the opportunity to explore ideas and beliefs about occupational health nursing with you. I feel I have gained a great deal of valuable information from you and hope you would feel happy to continue our dialogue in the future.

I have now finished my phase I study and am structuring the phase II study questionnaire. I would very much appreciate it if you would be kind enough to help me again by criticising my phase II questionnaire.

If you find questionnaire which are unclear, incomprehensible or confusing please do point these out. Any suggestions for improvement would be grateful received.

Your kind assistance is greatly appreciated. I look forward to hearing from you.

Yours sincerely,

Pei-Jen Chang RN BSc MSc
Research Fellow

Enc

Cornwall House Annex, Waterloo Road, London SE1 8TX. Telephone 071-836 5454. Facsimile 071-872 3219

King's College London
UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES
Professor Jenifer Wilson-Barnett
PhD, SRN, FRCN
Head of Department

8 November 1991

Ref: ohn\wpdocs\letter\fxohnp18.let

{FIELD}3~ {FIELD}4~ {FIELD}5~ ·
{FIELD}6~
{FIELD}7~
{FIELD}8~
{FIELD}9~
{FIELD}10~ {FIELD}11~

Dear {FIELD}3~ {FIELD}4~ {FIELD}5~,

I am currently studying for a PhD in the Nursing Studies Department at King's College, University of London under the supervision of Professor Jill Macleod Clark. We would like to ask you to help us with our survey which is attempting to identify the main factors that affect and influence the practice of occupational health nursing in the United Kingdom and other countries. Your participation will involve the completion of the enclosed postal questionnaire.

We are most anxious to gain the views of a representative sample of occupational health nurses and were therefore given permission to approach you by the Chairman/Secretary of your local group of the Society of Occupational Health Nursing, who passed on a membership list. Your opinions and views will provide us with invaluable information which could potentially influence future policy, education and practice in Occupational Health Nursing.

We do hope that you will feel able to participate and we would be most grateful if you could complete and return the enclosed questionnaire in the SAE provided no later than Friday, 22 November 1991. Any information given will be treated as strictly confidential and anonymity will be preserved at all times.

If you have any queries about this survey, please do get in touch. Thank you very much for your help. I look forward to hearing from you.

Yours sincerely,

Pei-Jen Chang RN BSc MSc
Research Fellow

Enc

Cornwall House Annex, Waterloo Road, London SE1 8TX. Telephone 071-836 5454. Facsimile 071-872 3219

King's College London
UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES
Professor Jenifer Wilson-Barnett
PhD. SRN, FRCN
Head of Department

10 December 1991

Ref: ohn\wpdocs\letter\fxohnp26.let

{FIELD}3~ {FIELD}4~ {FIELD}5~
{FIELD}6~
{FIELD}7~
{FIELD}8~
{FIELD}9~ {FIELD}10~

Dear {FIELD}3~ {FIELD}5~,

You may remember that I wrote to you in November about the research I am currently undertaking to identify the main factors which affect and influence the practice of occupational health nursing in the United Kingdom and other countries.

The original postal questionnaire was sent to you in November but I do not appear to have received a response from you yet. If you have already returned your questionnaire, please ignore this reminder and accept my apologies for any inconvenience I have caused. If you have not returned your questionnaire, then I would be very grateful if you could complete and return it as soon as possible.

I hope to finish my UK data collection by December and will be continuing data collection in other countries. Since time is limited a speedy response would be most appreciated. A summary of the result of this research will be sent to the Chairman/Secretary of your local group of the Society of Occupational Health Nursing.

Your ideas and beliefs about occupational health nursing are very important for this study. Thank you very much for your help. I look forward to hearing from you.

Yours sincerely,

Pei-Jen Chang RN BSc MSc
Research Fellow

Cornwall House Annex, Waterloo Road, London SE1 8TX. Telephone 071-836 5454. Facsimile 071-872 3219

King's College London
UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES
Professor Jenifer Wilson-Barnett
PhD, SRN, FRCN
Head of Department

19 June 1992

Ref: ohn\wpdocs\letter\fxohnp28.let

{FIELD}3~ {FIELD}4~ {FIELD}5~
{FIELD}6~
{FIELD}7~
{FIELD}8~
{FIELD}9~ {FIELD}10~

Dear {FIELD}3~ {FIELD}5~,

You may remember that I wrote to you last year about the research I am currently undertaking to identify the main factors which affect and influence the practice of occupational health nursing in the United Kingdom and other countries.

I have now reached the final stage of this research and this involves gathering data from occupational health nurses who have not actively participated in the study to date. You will therefore find a questionnaire enclosed with this letter which we hope you will complete in order to help us. Your ideas and beliefs about occupational health nursing are very important for the study.

I would be most grateful if you could complete and return the enclosed questionnaire in the SAE provided no later than Monday, 29 June 1992. Any information given will be treated as strictly confidential and anonymity will be preserved at all times.

Thank you very much for your help. I look forward to hearing from you.

Yours sincerely,

Pei-Jen Chang RN BSc MSc
Research Fellow

Enc

Cornwall House Annex, Waterloo Road, London SE1 8TX. Telephone 071-836 5454. Facsimile 071-872 3219

C13. Reminder letter for the final stage survey questionnaire

King's College London
UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES
Professor Jenifer Wilson-Barnett
PhD. SRN, FRCN
Head of Department

7 July 1992

Ref: ohn\wpdocs\letter\fxohnp29.let

{FIELD}3~ {FIELD}4~ {FIELD}5~
{FIELD}6~
{FIELD}7~
{FIELD}8~
{FIELD}9~ {FIELD}10~

Dear {FIELD}3~ {FIELD}5~,

You may remember that I wrote to you in June about the research I am currently undertaking to identify the main factors which affect and influence the practice of occupational health nursing in the United Kingdom and other countries.

The original postal questionnaire was sent to you on 19 June but I do not appear to have received a response from you yet. If you have already returned your questionnaire, please ignore this reminder and accept my apologies for any inconvenience I have caused. If you have not returned your questionnaire, then I would be very grateful if you could complete and return the enclosed questionnaire in the SAE provided as soon as possible.

Thank you very much for your help. I look forward to hearing from you.

Yours sincerely,

Pei-Jen Chang RN BSc MSc
Research Fellow

Cornwall House Annex, Waterloo Road, London SE1 8TX. Telephone 071-836 5454. Facsimile 071-872 3219

Appendix D1. Critique Comments of Research Based Studies on Occupational Health Nursing

Table D1.1 Research-based studies in the UK.

Table D1.2 Research-based studies in the US.

Table D1.3 Research-based studies in other European countries.

Table D1.1 Research-based studies in the UK.

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
1. HSC (UK), 1976 Report	To provide an overview of the OH services in Great Britain in 1976 and to provide a framework for the planning of future research Design. Descriptive	Area. UK Great Britain Subjects: 3,383 firms from 226,410 Response: 88% (overall), 96.8% (effective) Sample. Probability sample	Questionnaire with structured interview	Descriptive %	1) 85% of firms provided no occupational health service; 5 5% of firms employed medical and/or nursing staff; 2.5% of firms employed both medical and nursing staff. Size of firm was a dominant factor, where small firms did not provide a service other than perhaps a doctor on call. In contrast larger forms often employed doctors and nurses. The nature of the industry did not appear to be a very important factor but the distance from NHS facilities was. 2) Most of the doctors employed are in charge of the service regardless of whether or not they were full or part time. A minority of services were the responsibility of a nurse, sometimes n SEN's. Of the full time doctors employed in occupational health work 42.4% held specialist qualifications (DIH/MSc), in contrast to 13.2% of part time doctors. Similarly, 19.6% of full time SRN's held specialist qualifications (OHNC) whereas 16.7% of part time SRN's did. 3) A frequent activity appeared to be "treatment of acute emergencies and minor illnesses and injuries, but this was slightly less so for firms within one mile of an NHS hospital. 11% did not provide any other service than this treatment service. Another frequent activity was medical examinations and screening procedures, and 3.5% did not provide any other type of service than this.	This survey gave the whole picture of OH services in Great Britain in that time and attempted to identify contributing factors towards the nature, functions and distribution of existing services. However it can not answer any specific questions, especially for OH nursing practice.

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
2 Silverstone R., 1982 PhD thesis	To gain more information about the current role of OH nurses and their educational needs Design: Descriptive	Area: UK Scotland, the North of English, West Midlands, part of London Subjects: 289 EMAS lists Response: 289/595 = 49% Sample: Not representative	Postal questionnaire	Descriptive: %	1) Rated 43 activities grouped into 7 functions were assessed in two ways: nurses involvement (actual) and the degree of importance considered (ideal). Heading the list were 87% involved care of the injured, 85% listening, 84% care of the sick, and 73% giving advice. The activities considered the most important were 92% listening, 87% giving advice, 86% care of the injured, and 85% care of the sick. The functions that were considered important were also those most commonly involved in. 2) Further training most mentioned by OH nurses were counselling (18%), ophthalmic nursing (13%), audiometry (7%), toxicology (6%), and health and safety legislation (5%).	Advantages: Able to isolate what important functions This study was able to isolate what important functions and activities were and what nurses had involvement in. It can also state future educational needs from this and, therefore, can make some comments. Weaknesses: 1) It was not a representative sample and response rate was under 50%. 1) Some categories were misplaced, eg vocational under counselling; research in employee protection 2) It appeared to be looking at functions and activities not roles and it, thus, cannot achieve original purpose precisely. 3) The study results can be overestimated or underestimated.

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
3. McEwen J., Pearson J.C.G. and Langham A., 1982 Paper	To examine the relationship between OH services and the NHS regarding treatment and to describe practice. Design: Correlation	Area: UK Nottingham area Subjects: 20 organizations making up 23 distinct units with separate OH services Response All contacts for treatment during a 4 week period Sample: Not representative	Specially designed form	Descriptive: %	1)They found a lack of contact between OH services and the NHS. 2) Vague conditions are brought to the OH, ie, where individuals may be uncertain of their health status. Attendance on Monday morning is higher than at other times regarding non-occupational conditions. More specific conditions requiring investigation are generally taken to the GP first, but serious injuries are referred immediately to the Accident and Emergency Department. 3) Referral rates to the NHS were for similar reasons between units, mainly taking place at the first visit. This appeared to be related to the sophistication of the OH service. 2.4% were referred to their GP for an appointment, 7.7% were referred for advice, while 1 4% were referred to hospital, and 0.5% were referred to other NHS services. 4) Responsibility for GP referral was returned to the patient once advice / care from the OH service had been obtained. 5) The NHS did not appear to refer patients to their OH unit following treatment. "There appears to be no meaningful relationship designed to make the most appropriate use of services, facilities and staff." It was suggested that improved communications would reduce misunderstandings, improve patient care and lead to greater staff satisfaction.	This is an interesting study into a relevant area not often considered. More could have been gleaned about the reasons why the NHS did not appear to refer patients back to the OH unit.

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
4. Lim H.H., 1983 Paper	To compare and examine OH nursing services in UK and Malaysia Design. Comparative	Area: Avon UK & Klang Valley, Malaysia (most highly industrialised area) Subjects: All nurses full time / part time in Avon (108) and Klang Valley (87) Response: UK - 89 108 = 82.4% Malaysia - 73 87 = 83.9% Sample: Not representative	Postal questionnaire	Descriptive: %	1) In both countries the main nursing activities appeared to be treatment services (contrary to the preventative role of the OH nursing), medical examinations and screening procedures, counselling, safety inspections and administration 2) In Malaysia only 1 out of 73 nurses had any training and qualifications in OH nursing compared with 60 5% in the UK - a reflection of the situation in developing countries and emphasises urgent need for training programs ie. 40% of Malaysian OH nurses have no physician backup.	Advantages: 1) Enables comparison to be made with 10 years ago, ie the survey is useful in that way. 2) Provides data illustrating differences in OH nursing between 2 countries ie, gives us some idea. Weaknesses: 1) It was not a representative sample. 2) The format of the questionnaire is not described. 3) Questionnaire did not appear to have defined the word "regularly" sufficiently, ie. once a month etc. therefore this could be why there was so much variation. 4) The article did not address in detail the influencing factors ie. political, social, cultural differences.

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
5. Balcombe M., 1983 MSc thesis	To analyse the functions and activities of OHNC qualified nurses who graduated from Manchester Polytechnic Design Descriptive	Area. Manchester UK Subject: All 180 OHNC graduated students at Manchester Polytechnic Response: 143 180 79% Sample: Not representative	Daily chart analysis, postal questionnaire	Descriptive %	A. Direct contact with patients and clients = 57% Health supervision 16%, Counselling / health advice 7%, Treatment and follow up 18%, Rehabilitation and resettlement 2%, Administration 14% B. Environment issues 16% Shop floor visits 6%, Environmental surveys 1%, Consultation / discussion with management 3%, Consultation / discussion with unions <1%, Consultation / discussion with safety officer advisor 2%, Consultation / discussion with occupational hygienist <1%, Compilation of reports 2%, Committee meetings 1% C. Teaching – 5% Training programmes in first-aid 3%, Health and hygiene education 1% D. Liaison 4% Outside agencies 1%, Personnel 3% E. Departmental Administration 5% F. Professional development 5% G. Other activity (eg. research, travelling time etc) 8%	It was not a representative sample. No discussion about how this information is useful, or of its relevance - merely descriptive.
6 Bamford M., 1987 Paper	To assess the continuing education needs of OH nurses by identifying the way they work, what qualifications they have, and what support they receive. To identify the settings that OH nurses work in. Design. Preliminary descriptive survey	Area: UK West Midlands Subjects. 100 OH nurses in the West Midlands Response: 71 100 71% Sample: Not representative	Postal questionnaire	Descriptive: %	1) Type of Organization: Manufacturing = 41, Service 7, Distributive trades = 1, Professional and scientific – 18, Public administration and defence 2, Miscellaneous 2 2) Qualifications: EN 7; EN - Part 1 or OPNA – 6, RGN = 15, RGN -Part 1 or OPNA = 6, RGN - OHNC = 37 3) Training: MSc 1, RGN with additional qualifications 6, Part 1 - OPNA nurses with additional qualifications = 3, Nurses with the OHNC with additional qualifications = 9 4) Working team: 69/71 had access to a doctor for advice. 20/71 had full time support from doctors, 49/71 had part time support, and 2 had no support. 20% worked alone, 21% worked with first-aiders, 29% worked with other nurses, 14% (all OHNC) worked with other specialists 4)Experience: the majority of nurses had 6 - 10 years in OH nursing (20/71); or 1 - 5 years (18 71)	No discussion about how this information is useful, or of its relevance - merely descriptive Not a representative sample

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
7 Kazem A.N., 1987 Paper	To ascertain the current provision of OH services in the NHS, the degree to which they are currently integrated with services to LA's and the basis on which any charges are levied. Design: Descriptive	Area. UK England & Wales Subjects: 202 Health Districts Response: 151 202 74.75% Sample: Total population in England & Wales	Postal questionnaire	Descriptive· %	1) The level of provision varies widely. 2) A notable increase in the number of doctors with OH qualifications: 24.73% compared with EMAS - 13% in 1981. 3) Insufficient clerical support in some districts. 4) In 60% of 109 districts in England and Wales where local authorities have not set up their own independent OHS, services to local government are still provided by the community health doctors. 5) 559 nurses working in the 151 OH departments studied - 389 full time (69.59%). 6) 44% (246) of these nurses were fully qualified re OHNC. 7) 18 out of 151 departments have no nurses with qualifications in OH nursing. 8) The number of qualified nurses in OH has been increased from 38% (EMAS 1981) to 44% in 1985.	Advantages: 1) Describes the state of OH services in the NHS in 1985. 2) Acknowledges both medical, nursing and clerical staff. Weaknesses: 1) Although response rate was acceptable, any non-response cannot be ignored. 2) A descriptive survey only.
8 Dorward A.L., 1988 Report	To examine the continuing education needs of nurses who work in occupational health in Great Britain. Design Descriptive	Area: UK Subjects. 10% of the nurse on EMAS lists total number was 392. Response: 270/392 68 9% Sample. Probability sample (in EMAS lists)	Postal questionnaire	Descriptive %	1) 51.1% of the sample was found to hold the OHNC qualification in 1988 2) Subject of continuing education (very interested) Legislation 67 8%, Social concern 62.2%, Professional philosophy 55.0%, Health promotion 53.7%, Occupational hazards 53 7%, Clinical skills 51.5%, Occupational health 51.1%, Teaching 45.5%, Communication skill 45 2%, Managerial/personnel 42 8%, Screening/health assessment 41.5%, Managerial/administration 37 4%, Personal/staff development 32.2%, Research 26.4% 3) Subject of continuing education (attended) Occupational health 71.1%, Clinical skills 54 4%, Personal/staff development 31 1%, Health promotion 30 3%, Social concern 23 7%, Screening/health assessment 18.9%, Occupational hazards 18 9%, Managerial/administration 17.4%, Communication skill 16 7%, Teaching 11.5%, Legislation 9.6%, Managerial/personnel 5.9%, Professional philosophy 4.8%, Research 1.9%	This study was able to respond the needs of continuing education in Great Britain in that time.

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
9. Sharp B, *et al.*, 1989 Paper & report	To assess the effect of changes in industry and economy on OH nursing in the UK. To update information on patterns of OH nursing practice since the 1981 Survey. Design Descriptive (Comparative?)	Area. UK South West Regions including Gloucestershire, Avon, Somerset, Devon, Cornwall Subject. 269 nurses contacted via EMAS working in OH Response: 242 269 90% Sample: Not representative	Self-administered questionnaire	Descriptive: %	1) The findings appeared to reflect recent changes in British industry and economic climate as expected. For example, the traditional industries of aeronautical engineering and food, drink and tobacco employed less OH nurses than previously, which reflected a reduction in their workforce but the NHS appeared to be the leading employer of OH nurses. 2) An increase in the proportion of nurses carrying out certain duties was found for all 10 activities listed for study: with a 7% increase for treatment duties (88% - 95%), a 19% increase for medical examination/screening duties (78% - 97%), a 26% increase for immunisation procedures (34% - 60%), a 44% increase for general health education duties (24% - 68%), a 29% increase for counselling duties (66% - 95%), a 41% increase for first-aid training duties (14% - 55%), a 36% increase for environmental surveillance duties (59% - 95%), a 31% increase for epidemiology (14% - 45%), a 24% increase for external relations (42% - 86%), and a 5% increase for administration duties (93% - 98%). This illustrates a greater nurse involvement in a number of work related areas of health care, including prevention of ill health and control of the working environment.. 3) There was similarity between rankings of duties, regarding the amount of time spent on them between the 1981 survey results and the 1987 results. The three activities taking most time were considered to be treatment, administration and medical examination screening. However five duties changed rank order, regarding the amount of time spent on them: medical examination/screening increased one place (form 3rd to 2nd); as did immunisation procedures (from 7th to 6th place) and general health education (from 8th place to 7th place); administration decreased one place, from 2nd to 3rd place, and external relations decreased two places (from 6th place to 8th place) The following duties remained in the same rank order: treatment (1st), counselling (4th); environmental surveillance (5th); first-aid training (9th), and epidemiology (10th).	Advantages: Good response rate in both the 1981 study and this one - makes comparisons easier between the two. Relevant conclusion reached, and indications for further improvements put forward Weaknesses: Sample is not necessarily representative of the rest of the UK - industries. It is suggested that these findings reflect major shake-ups and allied changes in British industry, but they are not specified (ie, what changes?).

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
10. Alston R., 1990 MSc thesis	To examine some of the psychological themes concerning OH nurses' roles and attitudes; to identify areas of role overlap and role conflict. Design: Comparative	Area. UK Subjects: 40 OH nurses, 40 safety professionals, 40 managers Response: OH nurses - 33 40 = 82.5% Safety personnel - 34/40 = 85% Managers - 24/40 = 60% Sample: Not representative?	Role analysis questionnaires and interviews	Descriptive: %	1) Although some of the participants understood the behavioural aspects of the role, much of what was identified as role objectives was in fact related to functional tasks. 2) Safety personnel recognised advisory and promoting elements of the role and managers identified significantly with a certain role.	Weaknesses: 1) A big weakness is that she did not mention exactly how the sample were obtained and exactly where from. 2) Role categories are not very clear, eg. recording / records supplied. 3) 'Action' is too broad a concept as a classification for role. 4) Wording in the questionnaire is ambiguous role objectives. 5) Literature review is very opinioned, conceptual and lacks research basis.
11. Dorward A L., 1990 MSc thesis	To compare OH nurses and their managers perceptions of the role and continuing education needs of OH nurses. Design: Comparative	Area: Scotland UK Subjects: Nurses - 145 Managers - 90 Response: Nurses - 117/142 82 4% Manager - 66/85 77 6% Sample. Not representative?	Questionnaire	Differences between groups: %, Chi-square	Primary importance rating of functions by OH nurses as follows: Health promotion (81.2%), Health supervision (76 1%), Records and reports (68.4%), Liaison and co-operation (60.7%), Health surveillance (59.0%), Administration (54.7%), Accident prevention (51.3%), Counselling (51.3%), First-aid provision (49.6%), Rehabilitation (49.6%) Treatment (47.9%), Research (12.8%) Continuing education subject "strongly agreed" with OH nurses as follows: Health promotion (76 9%), Occupational health (76.9%), Screening/ health assessment (72.6%), Health & safety/ Legislation (71.8%), Occupational hazards (70.1%), Communication (68 3%), Social concerns (65.8%), Teaching (63.2%), Clinical skills (60.7%), Professional matters (57.3%), Man management (41.0%), Staff/ personal development (33.3%), Research (29.9%), Administration (27.4%)	Weaknesses: 1) This study used a sample in Scotland and is limited to generalisation to the UK. 2) Appeared to be looking at functions of OH nurses not roles.

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
12. Yoo K H., 1993 PhD thesis & paper	To examine OH nurses', employees' and employers' expectation of OH nursing services and their evaluation of such services. Design. Comparative	Area: UK Subjects: Nurses - 254 RCN SOHN members Employees - 194 who had visited OH department more than once in past year Employers - 170 Response: Nurses - 66 55% Employees - 51.32% Employers - 44.97% Sample Not representative?	Structured questionnaire survey	Differences among groups: Non-para-metric analysis	1) Positive correlation between expectations and evaluation 2) ie their expectations for the service were met. 3) Age, education and working conditions may all influence what is expected and what is provided. 4) Levels of expectation varied between groups. 5) Nurses did not perceive themselves as meeting their high expectations as well in the non-traditional services as in the traditional care oriented services. It is also that 'care and treatment' was the one type of care where nurse's expectations were lower than those of the receivers of care.	Advantages: 1) Clearly defines the different perceptions of the employee, employer and nurse. 2) First study to compare these 3 groups in UK. Weaknesses: 1) all subjects were members of the RCN-SOHN and this limits generalisation. 2) Access to employees and employer was gained through nurses which could be biased. 3) Low response rate of employers and employees perhaps responded they could have a positive attitude and the results, therefore, could be an overestimation. therefore results could be an overestimation.

Table D1.2 Research-based studies in the US.

Author/Year	*Purpose*	*Subjects*	*Measurement*	*Statistical method*	*Findings*	*Comment*
1. McKechnie M R., 1983 Paper	To ascertain the scope of OH nursing in one-nurse units by determining how many core functions were being carried out. Design. Correlation	Area: USA Chicago and Milwaukee Subjects: 63 volunteers - full time OH nurses in one nurse units Response: 48/63 = 76.2% Sample: Not representative	Mailed questionnaire	Test of difference %, F test	1) The results indicated high level of performance of OH nurses, but there were some gaps ,for example, especially regarding the administrative function. 2) The core functions of OH nurses were co-operating with other professionals (91 7%), counselling (87.0%), health education (83 3%), care of occupational injuries of illness (79.5%), care of non-occupational injuries of illness (76.2%), health examination (76 1%), social health programmes (68.1%), utilizing community resources (63.8%), making rounds (59.6%), and administration (37.5%)The number of criteria were larger than for other functions.	Criteria for each function were clearly indicated.

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
2. Chovil A C., Alexander G.R. and Altekiuse J M, 1984 Paper	To clarify the role of the OH nurse and their distribution in industrial settings, and to establish what OH facilities there are in South Carolina. Design Descriptive	Area: USA South Carolina Subjects: 1202 plants Response: 634 1202 53% 34 plants declined to participate Sample: Total population in specific area	Mailed questionnaire	Descriptive %	1) Size of plant and RN/LPN numbers: As the size of the plant increased so did the number of RN's employed (ie 3% of small plants - 89% of large plants). Overall 27% of plants have access to a RN service. More LPNs are employed in small plants. 2) Physician support: The majority of physicians do not visit the plant. 10% of the plants did not appear to have any relationship to a physician. 3) Nursing activities: (No direct measure wad available) But the authors conclude that it is likely that 'if a nurse is employed, there is a probability that the nurse will be involved in audiometry and/or pulmonary function testing " Nursing involvement in health promotion also seems likely. 14% of plants indicated that an increase in nursing service was needed, the type of industry expressing such views was predominantly the textile, paper, and petrochemical ones. 4) The role of the nurse appears to be perceived as variable from traditional "the physicians hand-maiden" to the expanding, more specialised one.	Weaknesses: 1) Type and size of categories are heterogeneous therefore conclusions are limited. 2) Low response rate. 3) No mention of who was responsible for completing the information questionnaires about the "plants".

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
3. Levinsohn M.A., 1984 Paper	To learn more about OH nurses, how they perceive their role, and to ascertain their educational needs Design: Descriptive	Area: USA Texas Subjects: 768 nurses on the mailing list of the Texas Association of OH Nurses Response. 248/768 32 3% Sample: Total population in specific group	Mailed questionnaire	Descriptive: %	Role perception. 1) Reasons for being attracted to OH nursing salary/ hours (37 4%); independence and challenges (15 2%); working well with people (10%) , variety of tasks, broad scope of practice, disease prevention work and health teaching (17 9%) 2) Satisfaction. 93 3% were either extremely satisfied or satisfied with career 3) Length of employment. 82% = 0 - 10 years in current position 80% practising as OH nurse for 1 - 15 years 4) Timed activity most time = individual care and record keeping Least time primary prevention, counselling, and health teaching 5) Perceived importance of OHS 45% believed OHS's were moderately important to their employers, 37 4% believed it was highly important 18 3% believed cost effective issues were relevant to OHS's importance But 30% believed management was not concerned and did not want to finance health services - 93 5% believed employees valued their services because their health needs were being met, health information was available, service was free and easily available - 76 5% perceived management as supportive of their role 76 5% also reported high to moderate autonomy - 36 5% wanted to implement more teaching, prevention and screening programmes Employment setting and work related activities 1) Over half worked for large companies (1000-5000 workers) 30% in the petroleum industry, 20% in manufacturing plants, > 15% in chemical and electronic companies 2) The most frequent health problems encountered were cuts and wounds = 87 8%, back strain = 81 3%, eye injuries = 61 7%, headaches = 44 3%, upper respiratory infection = 44 8%, mental illness = 1 7% (least frequent) 3) Common activities reported by 90% record keeping, treating illness and injury and follow up care, administration of medication, counselling Less frequent activities = budgeting, home visits, supervision of other staff - 51% of OH nurses work with less than 3 other health care providers - No physician in 41% of settings - One physician in 39% of settings Education and Professional development 1) 84% had taken part in educational program within the previous year Employers had paid for education for 85 7% of OH nurses 2) Interest in education was strong for 73 9%, moderate for 18 3% 3) Topics of interest. legal aspects of work; counselling skills, OH hazards and illness, stress management; emergency care, compensation laws, accident prevention, alcohol and drug abuse 4) Courses interested in. bachelors degree (33%), master's degree (21 3%), certification program (45 7%)	Advantages: Appeared to achieve goals - comprehensive questionnaire used. Weaknesses: 1) Specific population studied therefore unable to generalise, all OH nurses worked in Texas, predominantly for large companies in the petroleum industry. 2) Also the educational system is much different from that in the UK - professional development issues may be very different. 3) Response rate very low - no suggestion as to why this was. What were the 768 survey tools.

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
4. Conrad K.M., Conrad K.J. and Parker J E., 1985 Paper	To describe job satisfaction among OH nurses compared to hospital nurses. To establish the profile of OH nurses based on personal and demographic characteristics. Design Comparative	Area: USA a midwestern state Subjects: Members of a state association of OH nurses - random sample of 150 550 nurses - criteria: membership and employed as an OH nurse Response: 110/150 = 73% only 97 used in analysis Sample: Not representative?	Mailed questionnaire	Difference between groups: %, mean, t test	1) In general, OH nurses were older, more experienced than the hospital group, and three times as many had received a baccalaureate education 2) Overall the OH nurses were not found to be more satisfied with their jobs than hospital nurses. But there were group differences on some subscales: OH nurses were more satisfied with compensation, creativity, and independence, while hospital nurses were more satisfied with advancement, authority, co workers, responsibility, security, and technical supervision. 3) The most satisfying aspects of OH nurses' jobs were considered to be social service, moral values, independence, achievement and activity. The least satisfying aspects of OH nurses' jobs were : advancement opportunities, company policies and practices, compensation, technical supervision and recognition.	Advantages: 1) Clear definitions of variables studied. 2) Previously valid and reliable questionnaire used. 3) Suggest ways in which OH nurses can raise their profile and thus increase their job satisfaction. Also discusses how unrealistic job expectations can be avoided by accurate information of job description. 4) First data on job satisfaction of OH nurses. Weaknesses: 1) Because sample was taken from members of an OH nurses' organisation - results may not be representative of other OH nurses, not members of such organisations. 2) Normative data collected between 1965 and 1967. 3) groups not matched on age,years of experience or on educational attainment. OH nurses were older,more experienced than the hospital nurse group, and three times as many received a baccalaureate education.

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
5. Cox A.R., 1985 Paper	To develop a profile of the OH nurse, and to gain information to support the rationale for programme development. To compare data with previous AAOHN statistics. Design: Descriptive (Comparative?)	Area: USA National survey Subjects: 1,000 AAOHN members - random sampling Response: 485 1000 49% Sample: Probability sample in specific group	Mailed questionnaires	Descriptive: %	OH nursing activities: 39% were responsible to the personnel department, 23% to the medical director, and 1/5th to a supervisory nurse. 87% of OH nurses followed protocols for treatment and dispensing medications. 56% felt responsible for medical surveillance as stated by the OSHA "Self-limiting" conditions were those most often presented, followed by chronic health problems, acute emergencies and psychological/sociological problems. 49% of time providing employee services: counselling, assessment of health conditions, referring and screening employees. 16% supervision and administration activities, 12% = developing and conducting health education programs and 22% (?) – environmental assessment and monitoring. 3 4 th involved in managerial decision making, 53% were involved in budget planning. 91% were encouraged by their management to participate in further education and professional associations.90% were compensated for completing education programs, and 83% were compensated for joining professional associations.	Advantages: Random sample can be generalisation. Weaknesses: 1) Low response rate. 2) No results table to show percentages 3) Does not indicate whether it achieved its goals - does not discuss programme development. NB - summary of overall findings - selective.

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
6. Atherton R.A. and LeGendre S.T., 1985 Paper	To identify "common practice" which would serve as a basis for writing a functional job description for the nurse practitioners' role in these settings. Design: Descriptive	Area: USA 6 Columbia states Subjects: A convenience sample of 63 nurse practitioners situated in OH settings - names obtained from networking efforts and Nurse Practitioner Associates for Continuing Education (1982) Directory. Response: 33 63 = 52.4% 30 valid Sample: Not representative	Mailed questionnaire	Descriptive: %	1) The OH nurse practitioner has a baccalaureate degree and has completed nurse practitioner training in a non degree programme. 2) There is a written job description with nurse practitioner included in the title. 3) Salary range - $24,000-29,000 year based on a 40 hour week. 4) Job responsibilities include: pre-placement comprehensive physical examinations, annual physical examinations, diagnosis and treatment of acute minor illnesses, emergency response, educational programmes, counselling, monitoring for hazardous exposures and administrative duties. 5) The nurse practitioner collaborates with the physician.	Advantages: Gives an indication of the practice of OH nurse practitioners in the USA district of Columbia. Weaknesses: 1) Small sample size and convenience sampling therefore the findings cannot be generalised. 2) Authors didn't define a nurse practitioner at the beginning - only 25/30 had nurse practitioner training

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
7. McGovern P. *et al.*, 1985 Paper	To provide information on master's-prepared OH nursing specialists regarding demographics, education, work experience, employment patterns, and occupational; roles and functions Design. Correlation	Area. USA Subjects: 121 OH nurses who graduated from 11 NIOSH - sponsored Education Resource Centres between 1978 and 1983 Response: 73/113 64.5% (effective rate) Sample: Total population in specific group	Mailed self-administered questionnaire	Test of difference: %, SD, Chi-square test	1) Demographic characteristics - 71 = female, 2 male. 2) Employment patterns - 39/73 = administrative role, 4/73 educators, 1/73 nurse practitioners (ie OH settings): 14 73 traditional hospital nursing position, 4/73 - educator, 1 73 nurse practitioner (ie non OH settings); unemployed 3/73. 3) Work experience: average of 8 9 years experience as an RN, 69 4% had greater than 5 years experience. Approx half of the OH nurses surveyed had been in their current position for less than 3 years. 4) Roles and functions: 70%–administration, 30%="staff" position, 30% = function as nurse practitioner and provide direct care. 5) Major responsibilities - 38%– education, 29 6% – management, 29.6% – direct care, 28 2% consultation, 24.3 %= program development. 6) Decision making - The average degree of participation in policy making was low, and only moderate regarding program planning and development decisions, or program implementation. 7) Employment setting characteristics - 51.7% = private industry (medical /health service 32%), 35%= government employed. 8) Size of organisation - 5 categories varying from less than 250 to over 5000. Most prevalent was between 1000-5000 employees 9) Geography - 71% worked in the same region as they were educated in. 10) Working relations / job satisfaction between OH nurses and physicians = 80% very satisfied, 11% very dissatisfied; OH nurses and managers = 84% very satisfied, 12% very dissatisfied. 11) Opportunity for career advancement - 53.3% were very satisfied, 23.3% very dissatisfied.	1) Only graduates qualifying before 1981 were included in the sample therefore employment characteristics may not accurately reflect the situation in 1985. 2) Many new programmes in operation in 1985 compared to 1981. 3) Small sample size of subgroup employed in OH settings limits identification of variables and conclusions. 4) Questions asked only about current job responsibilities - does not reflect views of those not currently working in OH, but who have done so in the past. 5) No definition given for "operational" levels or "policy making", with regard to questions asking about involvement in these areas. 6) Percentage calculations appear incorrect in table 1 and 2. 7) There is no clear distinction of roles and functions being separate identities - no definition given. 8) Regarding roles and functions, it is unclear how a figure of 70% indicated the administrative nature of the job, when in a previous section about employment patterns a figure of 39/73 (53.4%) was given to indicate the administrative role of nurses in occupational settings. It is not clear, but probable, that the 70% includes those not currently working in an OH setting, and therefore raises questions about the relevance of this statistic.

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
8. Christensen M. *et al.*, 1985 Paper	To show how and where **master's prepared OH nurses employed in OH settings** contribute to the **health care system.** To demonstrate demand for master's-prepared OH nurses and to question whether they are being utilised properly. Design: Correlation	Area: USA Subjects: OH nurses who graduated from 11 NIOSH - sponsored Education Resource Centres between 1978 and 1983, and who employed in OH settings Response: 51 employed in OH settings out of 73 respondents Sample: Total population in specific group	Mailed self-administered questionnaire	Correlation: %, SD, simple correlation	1) Employment patterns and characteristics: - more OH nursing work experience prior to graduate school ($p < 0.05$). - 53% worked in private industry, 30% government Largest subcategory was medical health services. 2) Roles and functions identified: Administrative versus staff 75% - 25%. Responsibilities:- education (n=34), management (n 32), consultation (n 30), program development (n 27), direct care (n 23), liaison (n 20), policy making (n 15) research (n=9), supervision (n 9), marketing (n=4), environmental health (n=4), program implementation (n 2), quality assurance (n 20, recruiting and interviewing (n 1), implementing policies and procedures (n 1), politics (n 1), column writing (n 1). 3) Organisational decision making: results indicated a high degree of participation in matters affecting health and wellbeing 4) Involvement in functions at policy and operational levels: - Highest policy level involvement health promotion / wellness, health education, program development. - Highest operational level involvement – health education, health promotion wellness, health assessment, surveillance, primary care, program development. - Lowest policy and operational level involvement in computers in data processing and information management, health insurance, budget, loss analysis. - Individuals highly involved in policy formation are more likely to be highly involved at the operational level : there is a high correlation ($r = 0.72$, $p < 0.001$). - Policy level involvement was related to the number of credits obtained on certain courses (ie. program evaluation methodologies, principles of management, planning and administration of employee health service programs). - Operational level involvement was related to the number of credits obtained in physical assessment skills courses. 5) Approx. 1 2 OH nurses are in new positions, having started without job descriptions.	1) The assumption that OH nurses would function in policy formulation or at the operational level was not supported. The hypotheses put forward were therefore based on incorrect assumptions from the outset 2) There was no definition supplied for the terms: policy formulation or operational level. 3) Did not study other important factors such as : personality factors - motivation, resilience, gender issues, effect of changes in the health care system, market factors effecting role determinant variables. 4) Raised questions about generalist versus specialist functions of the OH nurses. Because the subgroup was studied as an aggregate, results indicated the generalist function of OH nursing However, individuals may specialise in different areas, but this is lost in the analysis. 5) Emphasis on management courses rather than direct care courses would enable OH nurses to better meet the needs of employers. 6) More research is needed, i.e. team relationships; market research - identify where master's OH nurses are needed, effects of education. - Does not attempt to study demand for OH nurses as it set out to do - makes suggestions only for future research

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
9. Bey J.M., McGovern P M. and Foley M., 1988 Paper	To compare nursing and management perceptions of the current and ideal nursing role along with role supplementation strategies for the organisation. Design: Comparative	Area: USA One company only Subjects: All nurses and their managers in a Fortune 500 manufacturing company. Response: Nurse - 26 41 = 63% Manager - 15/25 = 60% Sample: Total population in specific group but not representative to other populations	Mailed questionnaire	Difference between groups: %, mean, ANOVA	1) Nurses and managers had very similar perceptions of the nursing role. 2) Both groups placed the traditional function of direct employee care as their highest current and ideal priority. 3) Nurses and managers ranked environmental hazard recognition and control as a very low priority. 4) Both groups viewed the incentives for role expansion, continuing education and additional clerical support staff as desirable and early retirement as desirable.	Advantages: 1) Clear outline of research questions 2) Use of open ended questions to explain on data collected. Weaknesses: 1) Low response rates and therefore inability to generalise the study to other populations. 2) Potential fear of respondents regarding confidentiality of the data collected. 3) The rating scale was not very sensitive (ie 0-6) therefore differentiations were not very obvious 4) Only one company used.

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
10. Lusk S.L., Disch J.M and Barkauskas V.H., 1988 Paper	To ascertain the interest by executives of major corporations in having OH nurses engage in more advanced activities and to ascertain the available support for advanced educational preparation for nurses - to determine the direction of OH nursing practice. Design. Descriptive	Area: USA Subjects: Executives of the Forbes 500 Corporations ie, top 500 companies in sales, profits etc. - 1/2 of these 404 - a systematic sample Response: 229/404 = 57% 173 valid samples Sample: Probability sample in specific group but not representative to other populations	Mailed questionnaire	Test of difference: %, Chi-squire test	1) Functions nurses performed varied by size of the corporation and by type of industry. 2) Activities corporations would like nurses to perform were more advanced such as conducting research, analysing trends and developing special health programs. 3) The 10 most frequently reported activities OH nurses perform are listed - supervise the provision of nursing care for minor illness episodes 89.7%.- Counsel employees regarding health risks 87 7%. - Provide follow up of employees with workmen's compensation claims 67%. 4) Registered nurses are the largest proportion of personnel employed with health care departments. They are also employed by a higher percentage of corporations than any other member of the team - 90.2%.	Advantages: 1) Describes method and questionnaire in detail. 2) The executives sampled were not necessarily directly involved with the health departments which made the findings rather theoretical (ie not informed subject knowledge) .

Author/Year	Purpose	Subjects	Measurement	Statistical method	Findings	Comment
11. Scalzi C.C., Wilson D L. and Ebert R., 1991 Paper	To report results of a survey identifying the time spent on important of specific areas of responsibility. Design: Descriptive	Area USA Subjects: Corporate managers - members of AAOHN's Corporate /Executive Special Practice Group Response: 33 72 45 8% Sample: Total population in specific group but not representative to other populations	Mailed questionnaire	Correlation: %, mean, simple correlation	1) High association between scores for importance and the time spent on them; the same 7 items appear in the top 10, ranked for importance and time spent on them (r=.92). Indicates that OH Corporate nurse's allocated time spent on activities appropriately - regarding importance. 2) Core responsibilities for OH nurse managers included: policy, practice standards, quality assurance, staff development, systems for care delivery. Marketing occupational health services or evaluating cost/benefit performance measures was not given hight priority as expected, considering the relevance attached to these activities. 3) 11 curriculum areas identified from the 51 items (in time spent ranked order): law and health care policy; business strategy; organisational behaviour and politics; quality assurance; management information system; marketing, risk management; ethics; clinical nursing, human and material resource management, financial management. 4) Recommendations for OH nurse managers' preparation included: health policy, programme planning and evaluation, business strategy, the application of management information systems, quality assurance, and marketing.	Advantages: 1) Results clears and unambiguous 2) Simple study, uncomplicated by too many aims and objectives. Weaknesses 1) Usual problem with survey data and subject selection bias. 2) Low response rate.

Table D1.3 Research-based studies in European countries.

Author/Year	Purpose	Research area	Measurement	Statistical method	Findings	Comment
1. Rossi K., 1987 Paper	Worldwide concerns of the OH nurses Design: Exploratory	Area: 12 members of EC countries and Nordic countries Subjects: one OH nurse or physician in each country who belonged to the International Commission on OH (ICOH). Response 11/12 = 91.7% Sample. Purposive sample (Not representative?)	Mailed questionnaire and information available for the other countries	Qualitative	1) OH nurses do not provide health examination in some countries, eg it is the physician who examines. 2) The training of a nurse along with the legislative situation in that country may affect nurse independence. 3) In general - the practice of OH nursing and its main principles and goals seem to be quite similar everywhere. 4) Balcombe 1985 - Majority of OH nurses time on treatment 18%. Rossi - Majority of time spent on prevention except in Iceland - the majority spent on primary care.	Advantages: Addressing issues in OH nursing worldwide. Weaknesses: 1) The information was gathered from only one person from each country - reduces its reliability considerably. Also in many of the big countries legislation can vary from one state to another eg, America, Australia. - and information is from only one area. 2) Some categories within the questionnaire regarding OH characteristics appeared unnecessary eg, does not assist with health examinations category - this made the tabulated data appear confusing. 3) This report is not written scientifically / methodically, ie. did not report sampling, details of sample.

Author/Year	Purpose	Research area	Measurement	Statistical method	Findings	Comment
2. Rossi K., 1991 Paper	To collect information and make comparisons about OH services in the Nordic countries : Denmark, Finland, iceland, Norway, and Sweden. It is not a scientific evaluation of OH services - rather a description of the current situation based on information available. Design Exploratory	Area: Nordic countries Subjects. 1-2 persons from various countries to participate in a working group, representing either authorities or expert in the field. Sample: Purposive sample (Not representative?)	Information available and the expertise of the group members	Qualitative	1) OH services in the Nordic countries started as initiatives of single industrial enterprises. 2) Coverage of employees ranges from an estimated 23% of employees - 93% in Finland. 3) Contents of OH service in the Nordic countries correspond mainly with the II O Convention (161 85) on OH service. The services are primarily directed to preventing work related problems and achieving a better work environment. 4) Employers are responsible for the total cost of OHS in all Nordic countries but each has state reimbursement to help cover the costs.	Weaknesses: 1) Author did not make clear the source of the information for each country. 2) Descriptive data not research based

Appendix D2. Comparison of Occupational Health Nursing Practice in European Countries

In 1992 an interesting publication entitled '*Occupational Health Nurses - Europe 1992*' (1992) was published to commemorate the European year for safety, hygiene and health at work. One of its aims was to raise the profile and awareness of OH nursing and to encourage members to become more involved in European issues. Another of its aims was to elucidate the general principles of OH nursing within Europe and to show what similarities and differences there were between them. Twelve articles have been written by various people in each country (Finland, Denmark, Sweden, Belgium, Netherlands, UK, Ireland, France, Greece, Italy, Poland, and Portugal). They provide the reader with an overview of OH nursing practices in these countries, which enables some comparisons to be made. Each article will be described briefly, with regard to the role, practice, and education and training of OH. (*Table D2.1*)

Table D2.1 Comparison of OH nursing practice in European countries.

Country	Author	Law	Compulsory	OH nurses' role	OH nursing practice	OH nurses education and training
1 Finland	Rossi K and Heinonen K.	OH Care Act.	Survey workplace, health education, examinations, surveillance, first-aid.	General health education, voluntary health examinations, rehabilitation services. Plus compulsory duties above.	Employment assessments, occupational hygiene, ergonomic surveys, visit worksites, meetings of safety committee, environmental survey, occupational health, safety, counselling.	1955 - Public Health Nurse training lasts for 3 1/2 years including general nursing. 1982 - Degree in Public Health Nursing 75%. N = 1900; required to have 300 hours including 2-3 weeks of practical study. 1982 - 4 week course also compulsory for full time OH nurses - 70% attended, every 5 years. 1989 - Postgraduate - 19 study weeks. 1991 - the Master of Health Care Programme 160 study weeks, included 26 study weeks of OH and 35 study weeks of OH with Nursing Science

Country	Author	Law	Compulsory	OH nurses' role	OH nursing practice	OH nurses education and training
2. Denmark	Gammelgaard K. and Rasmussen A. M.	1979 The Act on Working Environment.		Administration, prevention and health promotion, counselling and care support, interdisciplinary cooperation.	Prevent injury, disease, disability; health and safety.	Basic training - contains elements of occupational medicine.
3. Sweden	Kovusalo I.				Prevention efforts, individual and group preventive efforts, treatment activities, information and training, research and development, planning and co-operation	National Institute of Occupational Health and Clinic of Occupational Health Medicine: 10 weeks, 2 years previous experience, employment in OHS.
4. Belgium	Sambaer G.	General Regulations for Labour Protection (ARAB) 1965.	Company Medical Service (BGD) - companies with at least 50. Inter-company Medical Service (IBGD) - companies with less than 50 (or more than 50 can opt to join).		First-aid; health care; physical,psychological and social welfare; examinations - preventive, recruitment, periodical; consultations; preventive vaccinations; supervision of work; individual protection and hygiene; urgent medical assistance; health education; maintaining medical equipment; training assistants.	
5. Netherlands	Timmer A.	Working Environment Act			Guidance, research of work and conditions, health information and education, advice to and consultation with industries, medical examinations, health investigations, first-aid. Team relationships: Acknowledge importance - with industrial physician and safety inspectors, industrial hygienist, industrial social workers.	1971 - part time. Since 1984 full time also. Both 2 years - for part time programme have had to worked in industrial health service. Modules include : industrial nursing, industrial hygiene, health information and education, psychology. Emphasis on prevention rather than cure.
6. United Kingdom	Lowis A., Ellacott N. and Hall G.	Health and Safety at Work Act COSHH Regulations			Care, prevent illness, promote health and safety, monitoring environment, managing health provision, ensuring professionalism and quality.	General nurse training.

Country	Author	Law	Compulsory	OH nurses' role	OH nursing practice	OH nurses education and training
7. Ireland	McGee M.	Safety, Health and Welfare Act 1989		Screening and supervision, health education, treatment, counselling, rehabilitation, management of OH nursing department, environmental health surveillance.		All general trained. Post basic training essential Up to 1989 OH nursing certificate. From 1989 Diploma in Safety, health and welfare at work - multidisciplinary: 1 day / week over 2 years at University Approximate number = 160.
8. France	Fanchete J.	The Public Health Act, The Social Security Act, The Labour Conditions Act.	At least 1 nurse for 500-1000 plus 1 more for every other 1000. For industrial settings 1 nurse for 200-800 plus 1 more for every other 600.	Medical, administrative, social.		No special training mentioned
9. Greece	Velitzelou K.	Nr.1568/85 need safety engineer, and part time doctor (nurse not specified)				General - State School for Health Visitor - only a few hours training. Only 11 Health Visitors. No licence for OH nursing for Health Visitors.
10. Italy	Gambini D G.					10-12 hours assigned to OH nursing within general nurse training. Compulsory registration at National Nursing College (approx 3000 working in OH). Training by physicians in workplace - informal. OH nursing practice: first-aid, administration, records, health education, epidemiology, diagnostic tests.
11 Poland	Dobrowolska B, and Mielczarek-Pankiewicz E.	Regulations 1985		Recognising hazards, supervising conditions, health education, collaborati on with managers.	Pre-employment, examinations, diagnostic tests, active counselling, rehabilitation, first-aid, nursing procedures.	2 month course compulsory from 1985 (1990 16%). 2 year specialisation course offered since 1985 (1990 = 142).

Country	Author	Law	Compulsory	OH nurses' role	OH nursing practice	OH nurses education and training
12. Portugal	Raskeiro M and DaSalva T.	OH nurses are not considered in laws dating from 1967.			First-aid, examinations, records, diagnostic tests, health education, immunisation, counselling, survey workplace, research, manage nursing service, training of students and nurses.	Advanced Nursing School - 2 levels : 3 hours in the Bachelor programme (3 years), 2 month option in the Masters programme (2 years). There is no specialisation in OH nursing. On the job training Approx number 1500.

Appendix D3. Models in Occupational Health Nursing

D3.1 Introduction

The need for, and use of models in OH nursing will be discussed with reference to eight models developed in the 15 years. Each model will be briefly described and illustrated where necessary, providing a comparative review of their strengths and weaknesses.

D3.2 Definition of model

According to Schröck (1984): "a model is made up of essential components which have been identified as being central to the undertaking in hand"; and "models are - - - -constructs which help us order important concepts or components in a particular way which promises to lead to a desired objective".

Clark (1984) points out that: "a model may encompass several theories and may give rise to additional testable theory".

Wright (1990) defines a model as: "a model is simply a way for nurses to organise their thinking about nursing and then to transfer that thinking into practice with order and effectiveness "; and "models are frameworks, built up from collections of ideas or general notions about things known as 'concepts' ".

According to Riehl and Roy (1980): "a model is a conceptual representation of reality"; "a nursing model is a symbolic picture of nursing and a framework upon which to base nursing practice"; and "a conceptual model for nursing practice is a systematically constructed, scientifically based, and logically related set of concepts which identify the essential components of nursing practice together with the theoretical bases for these concepts and values required in their use by the practitioner ".

Thus a nursing model that conforms to this definition incorporates three basic components: the client, the goal of nursing intervention, and the activities involved in nursing intervention.

Torres (1980) defines "a theory as a set of interrelated concepts that give to a systematic view of a phenomenon that is explanatory and predictive in nature".

Stevens (1979) points out the relationship between nursing theory and practice as follows: "Nursing theory and practice are sometimes viewed as two separate entities with only a vague interconnection. In reality theory and practice are two related components in a unified nursing discipline. Theory arises out of practice, and once validated, returns to direct or explain that practice."

Clark (1984) also describes the need of a framework for a nursing model: "Practice, in order to be systemic rather than haphazard, requires a framework that arises from a specific approach to the client. This framework is the contribution made by a nursing model."

D3.3 The need for a model / value of models

Since 1989 only one OH nursing conceptual framework is available in the UK: the Hanasaari conceptual model or OH nurses. In the Hanasaari conceptual framework OH is built on three points: man, health and work. Based on this triangle the OH nurse is reaching out to them through care, promotion, prevention, teamwork and research/value. This nurse's interaction is shown by sweeping arrows which meet the ecological, social, political, economical and organisational factors. However the factors composing the interaction, that is care, prevention, promotion, teamwork and research/value are mixed between factors which are nursing goals and processes (prevention, care promotion) and underlying factors that support and modify nursing services provided to achieve the nursing goal itself such as prevention or promotion of health.

Over a period of several years since first beginning to study models of nursing and during this research the investigator has developed a conceptual model of nursing which applied to OH nursing, has inevitably shaped the research presented here.

D3.4 Developing a model for occupational health nursing

Many authors have attempted to provide a framework or conceptual model for OH nursing industry as the CE-OHN Conceptual Framework Model (Gries, 1980), Conceptual Model for the Occupational Health Nurse Clinical Specialist (Dees, 1984), Conceptual Model for Occupational

Health Nursing Practice (Morris, 1985), Wilkinson Windmill Model (Wilkinson, 1990), Hanasaari Conceptual Model (Alston, 1990), Honeywell Conceptual Model (Ossler, 1990), Lundberg Theoretical Model (Lundberg, 1992), and the Maciag Practical Model (Maciag, 1993). However, to date no practice based model has been developed from which occupational health nurses can gain a greater understanding and depth of knowledge. (*Table D3.1*)

D3.4.1 The Walton-Gries CE-OHN Conceptual Framework Model

The goal of the proposed CE-OHN Conceptual Framework Model is to clearly define the elements: the recipient of nursing care; the nursing process; management support need; budget allocations; continuing education offerings; and the biopsychosocial factors influencing these elements. This model is client-centred with the focus on the health care needs of the employee (Gries, 1980).

The CE-OHN Conceptual Framework Model was presented by Gries in 1980. The focus of this model was the exploration of attitudes, beliefs, and values to begin an analysis of how and why continuing education is valued by the OH nurse. This model used the Roy's Adaptation Model as an explanation for the foundation for continuing education in OH nursing. The model is limited, dated and confined to continuing education. It does not provide an adequate framework for use in the wider context of OH nursing.

D3.4.2 The Dees Conceptual Model

The Conceptual Model for the Occupational Health Nurse Clinical Specialist was generated in 1984 by Dees. The purpose of this model was to present a conceptual framework for OH nursing clinical specialists, which would be used to guide and provide direction in the practice. This model is described in a language accessible to nursing staff, but it fails to mention outside environmental influences on the OH nursing practice.

D3.4.3 The Morris Conceptual Model

Morris described a Conceptual Model for Occupational Health Nursing Practice in 1985. The model attempts to predict the quality of health care provided in the occupational environment. Roles overlap and conflict in this model and macro environmental factors are again not incorporated.

The nurse accomplishes quality patient care by assuming several roles:

1) Provider of physical patient care;

2) Continual assessment and monitoring of the workplace and employee to identify condition changes and take appropriate action;

3) Teach necessary information regarding: work hazards, health and safety procedures, and lifestyle factors affecting health condition to allow the employee to participate in care;

4) Serve as a patient advocate and liaison between the employee, safety, management, labour, etc.;

5) Referral to appropriate community service;

6) Emotional Support for employees and family.

To start the nursing process, the employee and nurse develop interventions focused on maintaining and improving the employee's health state. The nurse first considers the components that make up the individual employee. These patient or employee components must be considered a part of the whole person to insure adequate care. These component parts include:

1) Intellectual - level of information, ability to learn, perception, sense of control, and participation in personal health maintenance;

2) Psychosocial - love, caring, belonging, sharing, support systems;

3) Spiritual - beliefs, attitudes;

4) Physical - lifestyle, work and health history, current health status.

OH nursing means expanding the traditional role by developing a model for nursing practice which depicts the role of the nurse, and how the nurse relates to the health team within the physical and social environment. In the model the role of the nurse is depicted as consisting of four parts: team member, manager, professional, and patient care provider (Morris, 1985) .

D3.4.4 The Honeywell Conceptual Model

The Honeywell Conceptual Model was presented by Ossler in 1990. The purpose of this model is to describe the challenges facing OH nursing over the next decade along with approaches to OH nursing practice that allow for its optimal contribution ie cost-effectiveness, prevention and quality health and safety care for workers. OH nursing practice can be evaluated using this model, but again it is not possible to show how the outside environment influences practice.

This is a model for the practice of OH nursing that is based on a system theory approach. System theory proposes that all systems - be they individuals, professions or organisations - exist within a context or environment that influences the function of that system. In OH nursing our system - viewed as the practice of the speciality - functions within an environment that is shared by our

employers and the workers to whom we provide care. There are four major environmental factors: political, economic, legal, and socio-cultural.

From the environment came matter, information and energy that are received or taken in by the system as resources with which to do its work. These are called inputs and examples are the workers themselves, the management and its style, the organisation, the work, the health and safety staff, money to fund OH, and so forth. These inputs are manipulated and used by processes, or throughput, to create the product or outcome of the system. The processes describe the major functions of the OH nursing: direct care, management of the health function, safety, environmental surveillance, research, case management, counselling, and so forth. The outcomes of OH nursing are perceived as multiple but each is related to the overall goal or mission of the profession: worker health and safety. We must be mindful that this goal of OH nursing must be realised within the larger mission of the employing organisation: which is usually to provide a product that returns monetary profit when sold.

D3.4.5 The Wilkinson Windmill Model (WWM)

Wilkinson described the more dynamic Windmill Model in 1990. The main purpose of the Windmill Model is to depict clearly and sufficiently the interrelationships between the various parts of the model and to explain the critical role of the OH nursing. This Windmill Model provides a simple and dynamic means of explaining professional development and outside environmental influences. However its weakness is its failure to show how to evaluate the outcome of OH nursing practice.

The WWM consists of five major parts: the core, the hub, the windwheel with four blades, the base, and the winds of influence. The core represents the workers of a given organisation, while the hub represents the OH nurse. The four blades are labelled: work environment, administration and management, interdisciplinary support team required in OH care, and OH programmes. The base is made of bricks, with each brick representing levels of professional training, practice qualities, and special skills of the OH nurse. The winds of influence drive the machine, and with proper management the machine produces work in the form of products or services.

The WWM may be considered a micro-model of the Human-Environment Interaction nursing macro-model developed by Buchanan (1988), which was a modification of the Neuman systems model of nursing (Ref). The purpose of both models are to identify and discuss the nurse's role. Both models focus on the variables affecting the nurse, the client, and the nurse-client relationship. Both models also portray health care as a collaborative decision making process.

D3.4.6 The Hanasaari Conceptual Model

Alston (1989) generated a model from the raw material discussed in the Hanasaari conference and the framework which has now become part of the ENB's 1990 syllabus for the OH Nurse. The model is discussed in relation to concepts and theories and their application to OH Practice. This model remains in a conceptual stage and does not address its potential for use in practice.

Delegates at the Hanasaari conference had considered four key issues: nursing concepts relevant to OH practice; priority areas for OH practice; team work and the need for an all-embracing conceptual model; and establishing links between ideas about OH.

The model builds on the traditional OH triangle of man, health and work. Around this triangle there is a circle of care, promotion, prevention, team work and research. Built around this is a pentagonal of the broader, global concepts which are ecological, political, social, economic and organisational.

OH nursing interaction lies at the centre point. The sweeping arrows show the nurse reaching out to and embracing all the concepts. But in illustrating the model, the arrows can be turned inwards. Here the implication is clear - either OH nurses expand and develop or they will go round in circles and possibly sink without trace. This has been the fate of some in organisations which have been looking for savings and have judged OH to be ineffective (Alston, 1990).

D3.4.7 The Lundberg Theoretical Model

The Lundberg Theoretical Model is a step in developing OH nursing theory. Feedback control theory (Gupta, 1970) is used in considering the dynamic processes at the heart of the OH services delivery model.

Assumptions for the Lundberg Theoretical Model:

The Lundberg Theoretical Model is based on a number of assumptions about the client/workers, the work environment, and OH nurses (Hanchett, 1990; Rogers, 1988):

Workers are rational humans capable of making decisions, setting goals, and assuming responsibility.

1) Workers are free to accept or reject health related interventions from the OH nurse (Dees, 1984).

2) Workers generally will assume personal responsibility for self protection from hazardous exposures when the employer provides adequate knowledge and materials for protection.

3) There are multiple levels of organisational interaction and complex interrelationships between work and non-work environments and the factors that precipitate health or illness among the aggregate of workers (Bernhardt, 1988; Buchanan, 1987).

4) The OH nurse places high value on health and safety.

5) The OH nurse provides ethical interventions, confidentiality, and privacy to all employees.

6) OH nursing goals will complement and reflect both the mission of the organisation and the mission of nursing.

The model has five major components: the non-workplace (external) environment, the workplace (internal) environment, the aggregate of workers, OH and safety team input, and output. Elements of each component are delineated. Overlap among elements is recognised (Lundberg, 1992).

D3.4.8 The Maciag Practical Model

The Maciag Practical Model utilised two approaches to providing health services in occupational settings. The individual model is a model that has been practised over the years by OH nurses. The group model is a newer approach that uses public health principles in providing services.

The individual model focuses on single health issues. It is the traditional model adopted in the past by many OH units. An employee becomes ill or injured and visits the health office for treatment or counselling from the OH nurse. The treatment consists of direct, hands-on care (physical examinations, measuring blood pressure, changing dressings, giving inoculations and allergy shots, etc.). The nurse administers treatment or medication, gives advice, or makes referrals to other professionals. Little distinction is made between occupational and personal health issues.

Many employees favour this model of direct, hands-on nursing care. It is convenient and free. Employees can seek health advice and treatment on work time rather than having to visit private physicians, where personal time and co-payments are required. Many supervisors like this form of service as well. A professional is available to speak to employees who are ill or upset, and this may alleviate some of the stress than can occur between supervisors and employees. Numerous OH nurses like this model also. It is familiar, comfortable, and rewarding to respond to an employee's immediate health needs. These are direct services that nurses have traditionally provided in a variety of health settings.

In the individual model a great deal of professional time is spent on a small percentage of the employee population seeking treatment for personal health concerns. These services may be expensive for companies to provide in the workplace, particularly since many employers are already subsidising personal health care through company health insurance plans. If a nurse's time is spent providing a host of personal health services, other organisational OH matters such as emergency response training, disaster planning, tracking ergonomic illnesses, or managing health care costs may be neglected.

The group model describes a public health approach. The goal of public health is to promote the highest level of physical, mental, and social well being for all people (Lancaster, 1984). However, the number of services that can be provided is always limited. Decisions must be made about whether to support or fund one programme over another.

Resources are limited in industry as well. Priorities need to be established for various health programmes that a company wishes to provide. To provide the greatest benefit for the greatest number of people, this model focuses on the entire population of workers rather than on individual employees.

The group model focuses on OH issues and employees at risk, so it is based at the worksite Nurses make regular visits to work areas to assess and intervene in health related problems. OH nurses use epidemiological principles to diagnose and treat OH disorders. Data are collected and maintained in such a way that they are easily retrieved, and analysed regularly for prevalence of disease in the population.

In addition to maintaining individual health records, OH nurses keep aggregate accident and surveillance records. They use this information to calculate incidence and severity rates, to uncover injury and illness trends, to identify health needs, to evaluate programmes, to justify budgets, and to guide administrative decisions.

Indirect health services such as programme planning, policy and procedure development, and training are primary prevention services directed toward reducing injury and illness and maintaining a healthy work environment for all. OH nurses continue to provide a variety of direct services to employees who are injured on the job. In fact, skills in physical assessment, emergency response, and workers' compensation case management are highly regarded.

In this model, counselling for personal health issues such as heart disease, cancer and diabetes risk reduction is not routinely provided to individuals. The bulk of this information is offered through health promotion programmes for groups of employees, and in some cases for family members as well.

They involve employees in planning. They provide low cost health assessments, offer behavioral change programmes, teach self care skills, and promote a healthy corporate culture. In the group model, the 'occupational' part of OH nursing practice is stressed even though the line between personal and OH issues is sometimes blurred (Maciag, 1993).

D3.4.9 The Homeodynamic Self-Care Field (HSCF) Model

The Homeodynamic Self-Care Field (HSCF) Model described by Yoo in 1993. This model illustrated healthy state is maintained by homeodynamic interaction between man and environment through man's self-care ability in the time - space continuum from past to present. This is achieved with appropriate support. The dynamic model would be extremely complicated as a practice model for OH nursing. There are conceptual inadequacies an further research is required to establish income and relationships.

As discussed above, many papers provide a framework or conceptual model for OH nursing, e.g. Gries (1980), Dees (1984), Morris (1985), Wilkinson (1990), Hanasaari (1990), Ossler (1990), Lundberg (1992), Maciag (1993). However there is no practice-based model from which OH nurses can gain a greater understanding and depth of knowledge. OH nurses are required to keep abreast of new developments in both their own practice and related OH fields, but are also forced to respond and react to continuing changes in the workplace and society. Thus it is important to examine current OH nursing practice and, meanwhile, to identify main factors which affect such practice.

Table D3.1 Comparative analyses of the nine models in OH nursing.

Model	CE-OHN Conceptual Model (Gries 1980)	Conceptual Model for the OH nurses (Dees 1984)	Conceptual Model for OH nursing (Morris 1985)	Honeywell Conceptual Model (Ossler 1990)	Wilkinson Windmill Model (Wilkinson 1990)	Lundberg Theoretical Model (Lundberg 1992)	Maciag Group Model (Maciag 1993)	Hanassari Conceptual Model (Alston 1990)	Homeodynamic Self-Care Field (HSCF) Model (Yoo 1993)
Purpose	To define clearly the elements and influencing factors of OH nursing.	To present a conceptual model for the OH nursing clinical specialist, and provide a framework to guide and direct practice.	To predict the quality of health care provided in the occupational environment.	To demostrate the challenges facing OH nursies over the next decade and approaches to OH nursing practice that allows for their optimal contribution using a system framework.	To depict clearly and succinctly the interrelationships between the various parts of the model and to explain the critical role of the OH nurse.	To demostrate to the development of OH nursing theory.	To provide a different model of OH nursing practice to meet current and future health requirements within organisations	To present concepts and theories and their applications to OH nursing practice within the current climate.	To demostrate that health is maintained by homeodynamic interaction between man and environment through man's self-care ability in the time - space continuum from past to present and that is achieved with appropriate support.
Key Concepts	Roy's adaptation model The recipients of nursing care OH nursing process Management support	Orem's self-care model Stress mechanisms Coping strategies Nursing process	Nursing process Team work	Cost-effectiveness Prevention Quality health and safety care for workers	Work environment Interdisciplinary support team OH programmes Management Professional base: qualities, skills, preparation	Teamwork	The entire population of workers based at the worksite OH issues Employees at risk	Promotion Team work Value OH nurse interaction	Role model Orem's model Nursing process

Model	CE-OHN Conceptual Model (Gries 1980)	Conceptual Model for the OH nurses (Dees 1984)	Conceptual Model for OH nursing (Morris 1985)	Honeywell Conceptual Model (Ossler 1990)	Wilkinson Windmill Model (Wilkinson 1990)	Lundberg Theoretical Model (Lundberg 1992)	Maciag Group Model (Maciag 1993)	Hanucsari Conceptual Model (Alston 1990)	Homeodynamic Self-Care Field (HSCF) Model (Yoo 1993)
Utility of the model	It has little value today	Intermediate: Increased participation Self-care activities Increased health knowledge Increased awareness and knowledge of safety hazards Long tem: Decreased absenteeism Increased job satisfaction Increased productivity Decreased accidents Safer work environment Longer, healthier life span	Hazard recognition Hazard evaluation Hazard control	Improve outcome of OH nursing service. Change Workers' behaviour. Alteration of protection from hazards	Increased work output productivity and efficiency	Reduced absenteeism Increased corporate Increased compliance with self protective measures Increased cost effective management Increased costs of retraining injured workers Increased job satisfaction	Increasing worldwide competition Technological hazards Increases in health care costs Provision of a safe and healthy work environment for employees Development a healthy, productive and profitable company	To break away from the traditional nursing model and incorporate more emphasis on health promotion and green issues	Helping action to maintain the balanced interaction between man and the environment through man's self-care ability

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Compone ntof the model	Employee health needs OH nursing process Management support Budget allocations New skills & knowledge (CE) Biopsychosocial factors	Individual Organisation Family Community	Biological organisms Physical energy Chemical agents Ergonomic factors	* Inside environment: Industrial Business organisations management OH & safety team Facilities 'The work' Work-related hazards Budget Supplies * Outside environment: Legislation Politics Economic Socio-cultural	* Internal: Work environment OH programmes Interdisciplinary support team Management * External: Health care trends Laws & regulations Politics Economy Social values	* Workplace environment: Management philosophy Health and safety policies Union * Non-workplace environment: Political climate Social climate Global climate Aggregate of workers OH and safety team input and output		* Micro-environment: Man Health Work * Macro-environment: Organisation Political Economic Social Ecological	Human Nursing Environment Energy
Role	NA	NA	Team member Manager Professional Patient care provider	NA	Varied	OH nurses are team members in a dynamic system	Proactive role	Environmental role Managerial role Educater Counsellor	NA

Model	CE-OHN Conceptual Model (Gries 1980)	Conceptual Model for the OH nurses (Dees 1984)	Conceptual Model for OH nursing (Morris 1985)	Honeywell Conceptual Model (Ossler 1990)	Wilkinson Windmill Model (Wilkinson 1990)	Lundberg Theoretical Model (Lundberg 1992)	Maciag Group Model (Maciag 1993)	Hanassari Conceptual Model (Alston 1990)	Homeodynamic Self-Care Field (HSCF) Model (Yoo 1993)
Practice	NA	Environ-mental monitoring Health surveillance Primary care Health and safety education Research	NA	Administration of OH Provision of health care Counselling Health education Collaboration with OH and safety team Environmental surveillance Communi-cation Loss control management Consultation Education/ Training Research Referral	NA	NA	Increased awareness about health issues Changing workers attitudes	Promotion Prevention Care Research Team work	• Traditional: Care and treatment Health examination Health records • Non-traditional Visit to the workplace Preventive health services Employee rehabilitation Expanded service
Team Members	NA	Occupa-tional physician Safety officer Industrial hygienist Manager	Nurse Worker Health team (Physician, safety officer, industrial hygienist manager, engineering, labour union members	OH & safety team	OH nurse Interdisciplinary team	OH and safety team including workers Representatives of management Industrial hygiene Safety and personnel Other health service providers Vendors of services and equipment	OH nurse as a health unit	OH & safety team	Nurse Employer Employee

Model	CE-OHN Conceptual Model (Gries 1980)	Conceptual Model for the OH nurses (Dees 1984)	Conceptual Model for OH nursing (Morris 1985)	Honeywell Conceptual Model (Ossler 1990)	Wilkinson Windmill Model (Wilkinson 1990)	Lundberg Theoretical Model (Lundberg 1992)	Maciag Group Model (Maciag 1993)	Hanassari Conceptual Model (Alston 1990)	Homeodynamic Self-Care Field (HSCF) Model (Yoo 1993)
Comment	The model is limited, dated and confined to continuing education It does not provide an adequate framework for use in wider context of OH nursing.	This model is described in a language that is accessible to nursing staff, but it fails to describe clearly the impact of environ-mental influences on OH nursing practice.	Roles overlap and conflict in parts of this model and macro environmental factors are not incorporated. The nurse's role is not described in detail	OH nursing practice can be evaluated using this model, but the relationship between outside environmental influences and outcomes are not discussed in detail.	This model provides a simple and dynamic means of explaining the interaction of various outside environmental influences. However, its weakness is its failure to show how to evaluate the outcomes of OH nursing practice. The nurse's role was not described in detail.	Identifies an expanding role for the OH nurse in any variety of work communities. The processes and output are clearly defined. The role of the OH nurse within the team however, in not specifically addressed.	Author describes a new proactive model moving away from traditional model. Broad coverage of practice was described which lacked specificity.	This model remains in a conceptual stage and does not address its potential for use in practice or education.	This dynamic model would be extremely complicated as a practice model for OH nursing There are conceptual inadequacies and further research is required to establish and examine the relationships.

Appendix E. Possible Reasons for Non-significant Variable

A total of 9 internal factors were found not to be significantly associated with OH nursing practice. Two of these were related to perceptions and beliefs, namely the definition of OH nursing and the definition of OH nurse. Two more were related to the OH team, they were the type of staff in the OH department and professional relationships. The four related to professional background were statutory qualifications, attendance at a short course, experience in the community and experience in OH. One internal factor not associated significantly with OH practice was concerned with the working environment, this was the importance of OH. There are a number of possible reasons why these factors were not found to be significantly associated with OH practice. One possible reason is the relative size of responses of certain variables in relation to others. For example, experience in the community was endorsed by only 36% of respondents in contrast to 97% who endorsed hospital experience. Another possible reason for a lack of association is the competitive results from other variables. For example, it is possible that the size of an organisation (number of employees) over shadows the relevance of the number of staff in the department. Finally, it is also possible that some of these factors will indirectly influence OH practice, and therefore will not be directly or significantly associated with practice. For example, this explanation may be relevant to the definitions of the OH nurse and OH nursing, which may both be perceived as oblique descriptions of what OH nurses do and what they are.

Of the 10 personal factors studied four were found not to be significantly associated with OH practice, and were therefore not considered to be confounding variables. These factors were: marital status, the number of working hours, reasons for choosing the job and job satisfaction.

Out of the 14 potential external factors only two were found not to be significantly associated with OH nursing practice. These were ecological change and the development of industry. It is likely that the reason for this is that any change in either of these factors would not be immediately evident to respondents, or perhaps not perceived as personally relevant to them. The dissemination of the effects of both ecological change and industrial development may take many years. It is therefore proposed that these two external factors are more indirectly related to OH nursing practice than are the other 12 factors studied.